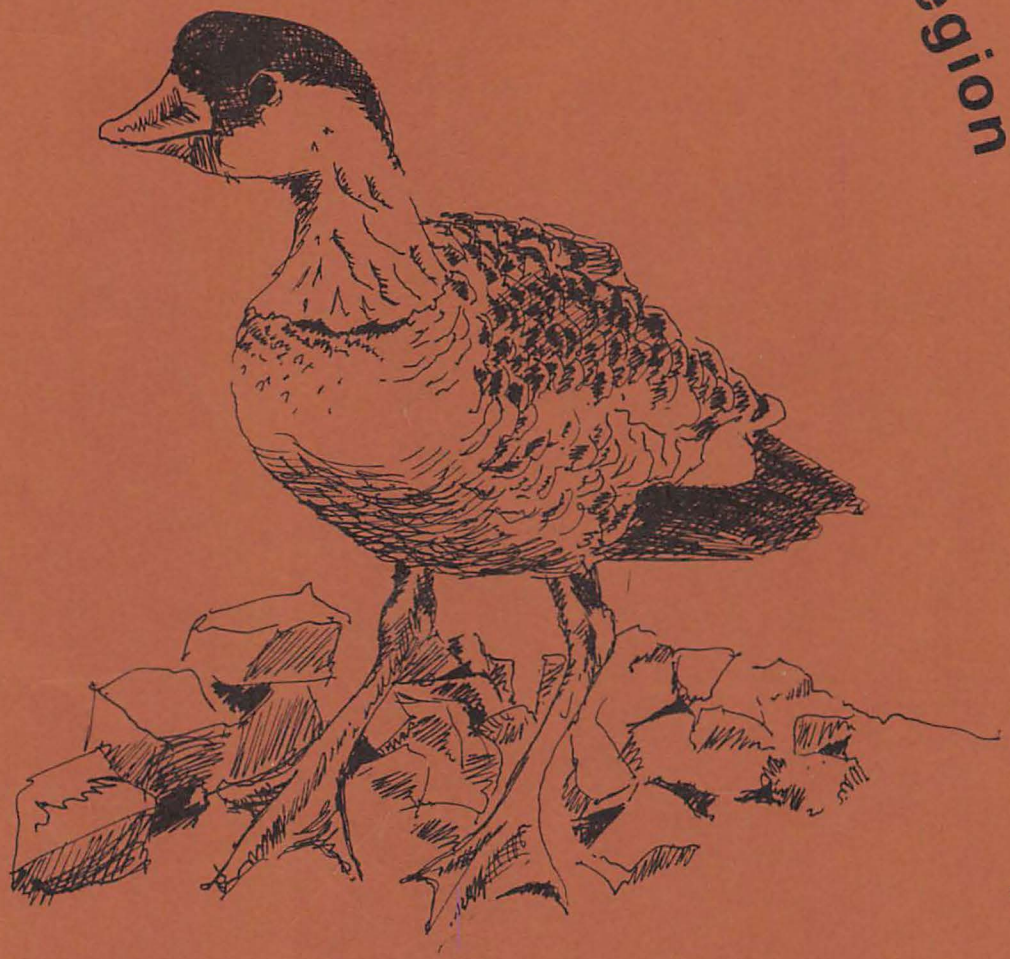
Threatened Wildlife in the Western Region



Department of the Interior

National Park Service

July 1974

THREATENED WILDLIFE IN THE

WESTERN REGION, NATIONAL

PARK SERVICE

COMPILED BY

Division of Resources Management
and Visitor Activities
Western Regional Office
National Park Service
U. S. Department of the Interior

San Francisco, California
July 1974

CONTENTS

INTRODUCTION

A significant number of threatened forms of wildlife are found in parklands administered by the Western Region of the National Park Service within the States of Arizona, California, Hawaii and Nevada. This publication provides details about these forms and the role of the National Park Service in the protection and perpetuation of these important resources.

Of the 109 domestic animal life forms recognized by the Federal Government as being endangered within the United States (See Appendix A), 20 are found in national parks within the Western Region. These 20 extant animals account for practically one-third of the 64 endangered species whose range distribution are not necessarily associated with ecosystems administered by the National Park Service but with historical habitats located within these four Western States. Appendix B includes a tabulation of these endangered species as well as those recognized as being threatened in the "Redbook."

Data in this compilation supplements information contained in the March 1973 edition of the "Redbook;" Threatened Wildlife of the United States, published by the Office of Endangered Species and International Activities, Bureau of Sport Fisheries and Wildlife, U. S. Department of the Interior, Washington, D.C. The supplemental information also relates to 34 species recognized in the "Redbook" as being "threatened" and an additional 35 species presently catagorized as being "peripheral" or "status undetermined." Comments involving national park habitats therefore relate to a total of 89 fish, reptiles, amphibians, birds and mammals. Records and data available from specific parks provide the primary basis for expanding and modifying comments contained in the "Redbook."

Minor modifications of the general format used in the "Redbook" will be noted herein. Nevertheless, the general scope, designations used, criteria applicable to the status of animal life forms and intents of the "Redbook" essentially prevail. An exception, for example, is the Santa Barbara song sparrow formerly recorded from Channel Islands National Monument but now recognized as being extinct by both the National Park Service and California Department of Fish and Game.

The December 28 passage of the Endangered Species Act of 1973 (Public Law 93-205) by the Ninety-third Congress will result in many changes to past and present efforts relating to foreign and domestic life

forms. For example, the official Federal list of endangered species may be changed. A new recognition of an officially threatened species list will result. The plant kingdom will also become recognized. Several other significant changes can also be expected as a result of this legislative mandate.

This compilation, as well as the "Redbook" are, based upon provisions of the superseded Endangered Species Conservation Act of 1969. As has been noted in the "Redbook," "Confusion still exists among laymen and scientist alike as to what constitutes an endangered species." This compilation does not attempt to clarify this situation. It also notes that "the list of animals published and periodically revised in the "Federal Register" is the United States Government's "official" list of endangered species and identifies those animals which are eligible for Federal benefits afforded an endangered species."

> "The Endangered Species Conservation Act of 1969 does not set forth specific criteria for determining which species are "threatened with extinction." Instead, it directs the Secretary of the Interior to seek the council of specialists and agencies with expertise on the subject, and to rely upon their combined judgment." wherein:
>
> "(C) A species of native fish and wildlife shall be regarded as threatened with extinction whenever the Secretary of the Interior finds, after consultation with the affected States, that its existence is endangered because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of overexploitation, disease, predation, or because of other factors, and that its survival requires assistance. In addition to consulting with the States, the Secretary shall, from time to time, seek the advice and recommendations of interested persons and organizations, including, but not limited to, ornithologists, ichthyologists, ecologists, herpetologists, and mammalogists. He shall publish in the "Federal Register" the names of the species of native fish and wildlife found to be threatened with extinction in accordance with this paragraph.
>
> "Thus, actual numbers of an animal is only one criterion used to determine whether or not it is "threatened with extinction." Critically low or declining populations may be sufficient reason for determining a species or subspecies to be endangered, but some which still exist in large numbers -- such as the brown

> pelican, the sperm whale, or the Arctic peregrine falcon -- may face serious threats such as environmental degradation, overexploitation, etc., that could bring about their extirpation in the foreseeable future. When their continued existence is in peril, they may legitimately be considered as endangered species under the Act."

While the general status of threatened species found within parks of the Western Region is reported in a manner consistent with the format used in the "Redbook," notations have also been included as to the recognized status of a species by State Conservation Agencies who have responsibilities for management and protection of resident fish and wildlife resources. State recognitions as to the degree of concern over the future welfare of threatened wildlife species is a reflection which is limited to, and coincides with, Federal recognitions found in the "Redbook." Comments herein are therefore not a complete reflection of the official recognitions assigned by any of the four States which are partially or wholly included within the designated Western Region of the National Park Service.

National Parks make a major contribution to the cooperative nationwide program involving threatened wildlife by providing effective protection to these forms and habitats basic to their survival. Management and protection of all park habitats are important legislative responsibilities of the National Park Service. These responsibilities reach their greatest significance when threatened animals and plant life are integral components of park ecosystems.

The national parks of the Western Region will therefore continue to further a major contribution to the combined cooperative Federal - State and local efforts by providing ecological complexes where natural habitats are subject to minimal adversities.

Howard H. Chapman
Regional Director

AREAS ADMINISTERED BY THE WESTERN REGION,
NATIONAL PARK SERVICE

NATURAL CATEGORY PARKS:

CHANNEL ISLANDS NATIONAL MONUMENT	CALIFORNIA
CHIRICAHUA NATIONAL MONUMENT	ARIZONA
DEATH VALLEY NATIONAL MONUMENT	CALIFORNIA-NEVADA
DEVILS POSTPILE NATIONAL MONUMENT	CALIFORNIA
GRAND CANYON NATIONAL PARK	ARIZONA
GRAND CANYON NATIONAL MONUMENT	ARIZONA
HALEAKALA NATIONAL PARK	HAWAII
HAWAII VOLCANOES NATIONAL PARK	HAWAII
JOSHUA TREE NATIONAL MONUMENT	CALIFORNIA
KINGS CANYON NATIONAL PARK	CALIFORNIA
LASSEN VOLCANIC NATIONAL PARK	CALIFORNIA
LEHMAN CAVES NATIONAL MONUMENT	NEVADA
MARBLE CANYON NATIONAL MONUMENT	ARIZONA
MUIR WOODS NATIONAL MONUMENT	CALIFORNIA
ORGAN PIPE CACTUS NATIONAL MONUMENT	ARIZONA
PETRIFIED FOREST NATIONAL PARK	ARIZONA
PINNACLES NATIONAL MONUMENT	CALIFORNIA
REDWOOD NATIONAL PARK	CALIFORNIA
SAGUARO NATIONAL MONUMENT	ARIZONA
SEQUOIA NATIONAL PARK	CALIFORNIA
YOSEMITE NATIONAL PARK	CALIFORNIA

RECREATIONAL CATEGORY PARKS:

GOLDEN GATE NATIONAL RECREATION AREA	CALIFORNIA
LAKE MEAD NATIONAL RECREATION AREA	ARIZONA-NEVADA
POINT REYES NATIONAL SEASHORE	CALIFORNIA
WHISKEYTOWN NATIONAL RECREATION AREA	CALIFORNIA

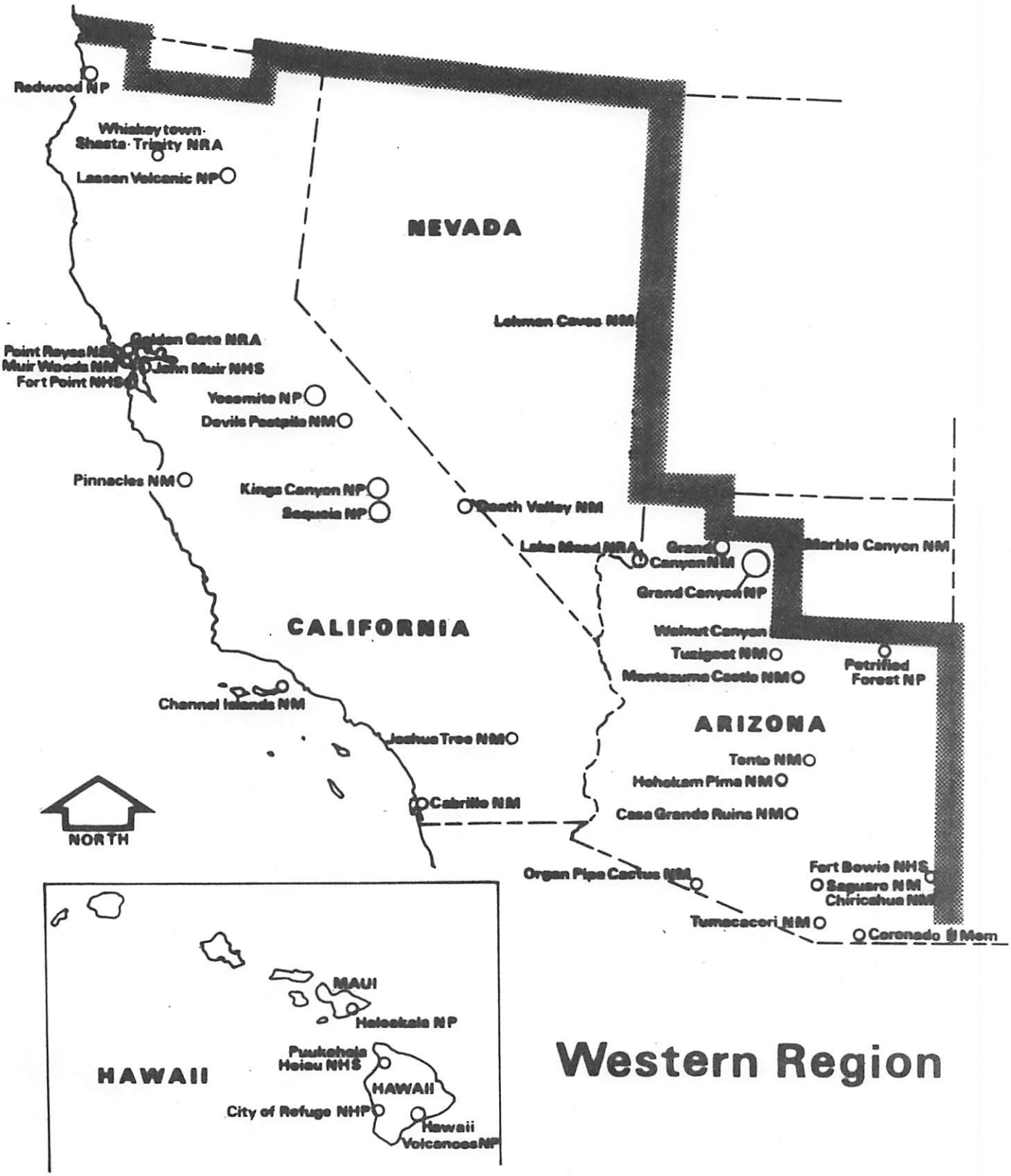
HISTORICAL CATEGORY PARKS:

CABRILLO NATIONAL MONUMENT	CALIFORNIA
CASA GRANDE RUINS NATIONAL MONUMENT	ARIZONA
CITY OF REFUGE NATIONAL HISTORICAL PARK	HAWAII
CORONADO NATIONAL MEMORIAL	ARIZONA
FORT BOWIE NATIONAL HISTORIC SITE	ARIZONA
FORT POINT NATIONAL HISTORIC SITE	CALIFORNIA
HOHOKAM PIMA NATIONAL MONUMENT	ARIZONA
JOHN MUIR NATIONAL HISTORIC SITE	CALIFORNIA
MONTEZUMA CASTLE NATIONAL MONUMENT	ARIZONA
PUUKOHOLA HEIAU NATIONAL HISTORIC SITE	HAWAII
TONTO NATIONAL MONUMENT	ARIZONA

TUMACACORI NATIONAL MONUMENT ..... ARIZONA
TUZIGOOT NATIONAL MONUMENT ..... ARIZONA
WALNUT CANYON NATIONAL MONUMENT ..... ARIZONA

REGIONAL AND SUPPORT OFFICES:

ARIZONA ARCHEOLOGICAL CENTER ..... TUCSON, ARIZONA
HAWAII STATE OFFICE ..... HONOLULU, HAWAII
LOS ANGELES FIELD OFFICE ..... LOS ANGELES, CALIF.
SOUTHERN ARIZONA GROUP OFFICE ..... PHOENIX, ARIZONA
WESTERN REGIONAL OFFICE ..... SAN FRANCISCO, CALIF.



Western Region

THREATENED

F I S H E S

IN THE WESTERN REGION

LAHONTAN CUTTHROAT TROUT — Salmo clarki henshawi (Gill and Jordan, 1878)

Order: SALMONIFORMES — Family: SALMONIDAE

Present distribution: Pure populations are known to be in Independence Lake, California, Macklin Creek, California, and Summit Lake, Nevada and a few tributaries in the Lahontan Basin. Possible hybrids are present in Pyramid and Walker Lakes, Catnip Reservoir, Truckee, Carson and Walker Rivers in Nevada, and Heenan Lake in California.

Present distribution in parks: A limited plant consisting of 19,650 fish from the Gallagher Hatchery was made at Lake Mead (Lake Mead N.R.A.) in 1972 by the Nevada Department of Fish and Game. Limited catches by anglers have occurred and additional stocking is anticipated.

Former distribution: Lahontan Basin, California and Nevada.

Estimated numbers: Dr. Robert J. Behnke estimates that there are about 1,000 to 2,000 of the pure strain in Summit and Independence Lakes and about 1,000 in tributary streams. The possible hybrid strains are common in the waters mentioned above, except for Walker Lake where they are nearly extinct.

Reasons for decline: Damage to spawning beds resulting from forest removal, fires and overgrazing; dams which block spawning runs; pollution; diversion of water for irrigation; and hybridization and competition with rainbow trout and other cutthroats.

Protective measures already taken: Rainbow trout and Heenan Lake cutthroat are no longer stocked in Independence Lake; Summit Lake was placed in a special protected category by the U. S. Bureau of Land Management. The Bureau of Sport Fisheries and Wildlife is constructing the Lahontan National Fish Hatchery (1970) for the primary purpose of rearing this subspecies. The hatchery began production in 1966. When completed, the hatchery will produce about 125,000 pounds of cutthroat trout annually.

Measures proposed: Improvements of the lower Truckee River to permit natural spawning are under consideration. Withdrawal of Macklin Creek into public ownership is also being considered.

Measures taken and/or proposed involving National Park Service: Continue management and protection activities associated with aquatic habitats of the Lake Mead N.R.A. including cooperative research efforts

with various Federal, State and local governments into such matters as water pollution. The Nevada Department of Fish and Game may be considering the future rearing of the species in its newly constructed hatchery which is located within the N.R.A. Hybridization of the Lake Mead population appears inevitable.

State recognitions: Species is under evaluation by State of California

PAIUTE CUTTHROAT TROUT — Salmo clarki seleniris (Snyder, 1933)

Order: SALMONIFORMES — Family: SALMONIDAE

Present distribution: Very limited--Silver King Creek and its tributaries, Alpine County, Cottonwood Creek, and Inyo County, California; Delaney Creek, Yosemite National Park, California.

Present distribution in parks: Introduced into Delaney Creek, Yosemite N.P. in 1966 after chemical treatment of waters in order to remove exotic brook trout. Original introduction of 43 fish increased to estimated maximum population of 400.

Former distribution: Alpine County, California, east of the Sierra Divide, in high mountains.

Estimated numbers: 500 adults.

Reasons for decline: Overfishing, hybridization with other trouts, and limited range.

Protective measures already taken: A few successful transplants have been made by California Department of Fish and Game; hybrids were removed from Silver King Creek in 1965 and pure stock were introduced. Silver King Creek, Delaney Creek, and North Fork of Cottonwood Creek closed to angling.

Measures proposed: A survey of the current status of the species and the development of a plan for preservation, including establishment of pure populations.

Measures taken and/or proposed involving NPS: Continue closure of Delaney Creek by Park Superintendent to public angling. Enforcement of applicable Federal regulations in furtherance of cooperative program with California Department of Fish and Game to maintain a genetically pure population. During October 1972 81 excess fish were removed and transplanted to Sharktooth Lake in Fresno County by the State of California. October 1973 population in Delaney Creek estimated at 250.

State recognitions: California recognizes this as being a depleted species.

LITTLE KERN GOLDEN TROUT — Salmo aquabonita gilberti (Jordan, 1894)

Order: SALMONIFORMES — Family: SALMONIDAE

Present distribution: Little Kern River and tributaries above falls near confluence with Soda Springs Creek and upper Coyote Creek, tributary to main Kern River, Sequoia National Forest, California.

Present distributions in parks: Several tributaries of the South Fork of the Kaweah, Little Kern, and Kern Rivers within Sequoia National Park including Soda Springs Creek and upper Coyote Creek.

Former distribution: All of the originally inhabitated trout waters of the Kern River basin, excluding the South Fork of the Kern.

Estimated numbers: Perhaps a few thousand.

Reasons for decline: Hybridization with hatchery rainbow trout.

Protective measures already taken: Introduction ceased in Little Kern basin; Colorado Cooperative Fishery Unit Project funded for completion in 1969 by National Park Service for study of the present trout populations of upper Kern basin are inclusive.

Measures proposed: Introductions into barren or reclaimed waters except for historically barren waters in national parks.

Measures taken and/or proposed involving NPS: Cooperative studies by the California Department of Fish and Game, U. S. Forest Service and National Park Service are currently in progress to further clarify existence and locations of genetically pure populations. It is suspicioned the Soda Springs Creek-Upper Coyote Creek populations from within the park may be uncontaminated. Closure of public angling in tributaries to Soda Springs Creek by the Park Superintendent is maintained in order to avoid genetic contamination. Past introductions of the species has been carried out within Sequoia National Park into suitable tributaries of the South Fork of the Kaweah River.

State recognitions: Species is under evaluation by State of California.

HUMPBACK CHUB — *Gila cypha* (Miller, 1946)

Order: CYPRINIFORMES — Family: CYPRINIDAE

Present distribution: Green and Colorado Rivers, from Grand Canyon area northward to vicinity of Flaming Gorge Dam on Utah-Wyoming border.

Present distributions in parks: This species is reportedly caught on occasion in upper portions of Lake Mohave (Lake Mead N.R.A.). While specimens were collected from near Phantom Ranch on the Colorado River prior to 1942, recent observations or collections in Grand Canyon National Park have not occurred.

Former distribution: Unknown.

Estimated numbers: Unknown.

Reasons for decline: Unknown.

Protective measures already taken: Research studies are now attempting to determine the distribution, abundance, and ecology of this form and to determine its proper taxonomic status. Included as one of several species of concern to established Federal-State recovery team.

Measures proposed: Continuation of the above research studies.

Measures taken and/or proposed involving NPS: Cooperative support and related efforts with Nevada and Arizona Fish and Game Departments and researchers who may conduct future work will be continued.

State recognitions: None.

MOAPA DACE — Moapa coriacea (Hubbs and Miller, 1948)

Order: CYPRINIFORMES — Family: CYPRINIDAE

Present distribution: Restricted to warm springs and their outlets near source of Moapa (Muddy) River, Clark County, Nevada.

Present distributions in parks: None.

Former distribution: Not known to be different from present.

Estimated numbers: 500 to 1,000

Reasons for decline: The springs and headwaters of Moapa River are being altered for various commercial domestic water uses; competition from exotic species; only one population remains completely undisturbed.

Protective measures already taken: None.

Measures proposed: Set aside Warm Springs Ranch as a wildlife monument; prevent habitat alteration by man.

Measures taken and/or proposed involving NPS: Planning and programming is in progress for rehabilitation and development of Blue Point Spring in Lake Mead N.R.A. as a protected refugium for this species. Co-operative efforts with the Nevada Department of Fish and Game have also included bioassays and water quality tests aimed at determining the overall suitability of the Spring as a plant site.

State recognitions: While Nevada does not recognize the species as being endangered it is on the State list of rare life forms.

COLORADO RIVER SQUAWFISH — Ptychocheilus lucius (Girard, 1856)

Order: CYPRINIFORMES — Family: CYPRINIDAE

Present distribution: Middle and lower Green River, main Colorado River above Lake Powell, and Salt River.

Present distribution in parks: Several of the fish were delivered in late July 1973 to the Bureau of Sport Fisheries and Wildlife Willow Beach Hatchery located adjacent to Lake Mohave (Lake Mead N.R.A.) for study purposes.

Former distribution: Widely distributed in the Colorado River and major tributaries.

Estimated numbers: Unknown.

Reasons for decline: Modification of habitat by man through construction of large reservoirs. The species will not reproduce in cold tailwaters below high dams nor in reservoirs behind these dams. The species is adapted to life in turbid, swift, warm rivers. Introduced fishes may have a decimating effect in waters not affected by dams.

Measures proposed: No water developments should be made on the Yampa River upstream from Dinosaur National Monument which would lower the stream temperature to that below the levels required for reproduction of the species. Studies on ecological and reproductive requirements should be continued. One of several species of concern to an established Federal-State recovery team.

Measures taken and/or proposed involving NPS: None.

State recognitions: California and Nevada recognize this species as being endangered.

DEVILS HOLE PUPFISH — Cyprinodon diabolis (Wales, 1932)

Order: ATHERINIFORMES — Family: CYPRINODONTIDAE

Present distribution: Restricted to a single, spring-fed pool near Ash Meadows, Nye County, Nevada, east of Death Valley, California.

Present distribution in parks: In addition to the above sole natural habitat, limited remnants of a transplant attempt exist in Grapevine Spring which is also within Death Valley N.M. An apparently successful outdoor refugium constructed and maintained by the Bureau of Reclamation, Bureau of Sport Fisheries and Wildlife, and Nevada Department of Fish and Game is located near Hoover Dam within the Lake Mead N.R.A.

Former distribution: Likely a Pliocene relict.

Estimated numbers: 300 to 800; at times as few as 125 breeding adults. Maximum 1973 population in Devils Hole less than 300.

Reasons for decline: Decline of water level in Devils Hole. This is due to removal of water from aquifers for irrigation.

Protective measures already taken: 40 acres set aside in 1952 as a detached section of Death Valley N.M. In 1967, a new fence was added. In 1970, an artificial spawning platform was added. A new modified and improved model was installed in 1973. Electric lights were installed and used periodically over these platforms. Cooperative Federal legal action involving the Bureau of Sport Fisheries and Wildlife, National Park Service, U. S. Geological Survey and Justice Department is presently in progress to stabilize receding water levels in Devils Hole. Emergency prompted actions have also included numerous unsuccessful attempts to rear the species in aquariums and generally unsuccessful plants into non-National Park Service administered natural and artificial outdoor refugiums.

Measures proposed: Continued surveillance of species and the water regime by National Park Service, Bureau of Sport Fisheries and Wildlife and U. S. Geological Survey personnel. Attempt to establish this pupfish in other suitable habitats.

Measures taken and/or proposed involving NPS: In addition to those mentioned in above sections, the close cooperation between several Federal and State agencies which has typified the concerted attack upon this extremely critical problem, has also included the concern, advice and overall cooperation of many individuals, institutions and conservation organizations. All have grouped together into the Desert Fishes Council which coordinates and advises resource managing agencies on the overall management needs of several threatened desert fishes found in California and Nevada.

State recognitions: Nevada recognizes this species as being endangered. The Desert Fishes Council continues to recognize this as the major endangered species out of a total of 10 desert fishes.

STATUS-UNDETERMINED FISHES

A status-undetermined species of subspecies is one that has been suggested as possibly threatened with extinction, but about which there is not enough information to determine its status. More information is needed.

Humpback sucker, Xyrauchen texanus. One specimen has been recorded by the museum of Grand Canyon N.P. It was collected at the mouth of Bright Angel Creek in May 1944. Lake Mead N.R.A. has reported that specimens are occasionally caught by anglers in Lake Mohave. While the last observed young of this species was observed near Willow Beach in the early 1960's, this species has been recently noted attempting to spawn. Collections from Lake Mohave were made in 1973 by the Federal-State recovery team. California recognizes this as being an endangered species.

THREATENED

R E P T I L E S

A N D

A M P H I B I A N S

IN THE WESTERN REGION

GREEN TURTLE — Chelonia mydas (Linnaeus)

Order: CHELONIA — Family: CHELONIIDAE

Present distribution: Tropical oceans. Wanders up United States coasts during summer. Throughout Hawaiian archipelago.

Present distribution in parks: Reported from offshore of Hawaii N. P. where it is found in limited abundance possibly due to minimal suitable nesting sites.

Former distribution: Same; but once used Florida beaches as nesting sites.

Estimated numbers: In waters off mainland U. S., probably very few. Common in Hawaiian Islands. World-wide, still fairly common in some areas, but seriously decimated in others where they were once abundant.

Reasons for decline: Both animal and eggs widely used for food; eggs and young subject to very heavy predation. Subject to intense harvesting pressure in some parts of world. Overutilization in others. Now also being taken in Hawaii for its shell as trophy or curio item for tourists.

Protective measures already taken: Molestation of nesting sea turtles and their eggs is prohibited in South Carolina, Georgia, Florida, Texas, Puerto Rico, and Hawaii. Hatchlings are flown from Caribbean beaches to Florida for release. Similar release techniques are employeed in Buck Island Reef National Monument, Virgin Islands, and Virgin Islands National Park. Results in the form of return of released hatchlings not verified as yet. Protected by law, closed seasons, limited harvests, restricted licenses, and other means in many parts of its range. Entry to Hawaiian Islands National Wildlife Refuge by permit only. Life history and ecological research by refuge personnel in progress. Cooperative University of Hawaii and U. S. Bureau of Sport Fisheries and Wildlife experimental rearing project in progress at University of Hawaii.

Measures proposed: Continued research and protection. Better enforcement of existing regulations; extension of laws to areas not currently covered. Closure of waters of northwestern Hawaiian Islands

to turtle taking. Need research, including actual harvests, in main Hawaiian Islands. Close surveillance of fishing activities in future as such activities may increase around French Frigate Shoals.

Measures taken and/or proposed involving NPS: Continue protection of habitat and enforcement of Federal regulations which preclude any form of harassment to park wildlife.

State recognitions: Hawaii recognizes this as being a peripheral but not an endangered species.

STATUS-UNDETERMINED REPTILES AND AMPHIBIANS

A status-undetermined species or subspecies is one that has been suggested as possibly threatened with extinction, but about which there is not enough information to determine its status. More information is needed.

Gila Monster, Heloderma suspectum. This species is a resident of several parks. Those parks from within the State of Arizona are all located in low deserts south of the Mogollon Rim or adjacent to the Colorado River. They consist of the Lake Mead N.R.A., Organ Pipe Cactus N.M., Tonto N.M., and Saguaro N.M. This species is also a resident in areas adjacent to Fort Bowie N.H.S. and Coronado National Monument. It is also a resident in various Nevada portions of the Lake Mead N.R.A. Their distribution in this park is on the northern extremities of the known range of this species. (See Distribution of the Gila Monster in the Northern Mohave Desert, Deacon and Bradley, Desert Research Institute - University of Nevada, March 1965). It has not been reported from Grand Canyon N.P., Petrified Forest N.P. or other parks in northern Arizona nor from parks located within California. The State of Nevada recognizes this as being a rare species.

San Diego Horned Toad, Phrynosoma coronatum blaineville. Miller and Stebbins in their 1964 publication, The Lives of Desert Animals in the Joshua Tree National Monument, state that this species is known from the western section of this park. Purportedly it is locally fairly common.

THREATENED

B I R D S

IN THE WESTERN REGION

NEWELL'S MANX SHEARWATER (AO) Puffinus puffinus newelli (Henshaw)

Order: PROCELLARIIFORMES Family: PROCELLARIIDAE

Present distribution: Breeds on Kauai and probably other high Hawaiian Islands. Observed at sea in central Pacific Ocean. Road killed specimens found each year on Oahu.

Present distribution in parks: Reported breeding in Makaopuhi Crater, Hawaii Volcanoes N.P. in 1972.

Former distribution: Probably bred on all of the main Hawaiian Islands.

Estimated numbers: Unknown, but probably a breeding population in the low thousands. About 500 estimated on one known breeding area in Makeleha Mountains, Kauai in 1967.

Reasons for decline: Not known to be declining on Kauai. Reasons on other islands unknown. Possibly exterminated as nester on other islands by mongooses, pigs, dogs, rats, and other predators. Attraction to lights causes considerable mortality from collisions with cars and lighted towers.

Protective measures already taken: Protected by Federal and State law. Surveys and research studies in progress. Known nesting areas delineated and information furnished public agencies and private owners of land on which they are located.

Measures proposed: Continue exclusion of mongooses from Kauai. Preservation of natural environment including establishment of needed refuges and sanctuaries. Control predators where needed. Control of feral grazing animals. Intensify ecological and life history.

Measures taken and/or proposed involving NPS: Continue protection of habitat and enforcement of Federal regulations which preclude any form of harassment of this species within the park. Intensive habitat restoration program is continuing whereby goats and other feral animals are being controlled through a large scale boundary and drift fencing project, herd reductions through drives and live animal disposals and direct reductions by NPS personnel. A re-vegetation effort using endemic plants is also included in this program.

State recognitions: Hawaii recognizes this as being a rare but not endangered species.

HAWAIIAN DARK-RUMPED PETREL (UAU) Pterodroma phaeopygia sandwichensis (Ridgway)

Order: PROCELLARIIFORMES Family: PROCELLARIIDAE

Present distribution: Haleakala Crater on Maui and flanks of Mauna Kea and Mauna Loa on Hawaii.

Present distribution in parks: Except for the limited populations located on slopes of Mauna Kea and southwest rift zone of Mauna Loa (just outside Hawaii Volcanoes N.P.) distribution is limited to Makaopuhi Crater, Hawaii Volcanoes N.P. and the major population center of Haleakala N.P.

Former distribution: Formerly nested at high elevations on all of the main Hawaiian Islands.

Estimated numbers: Probably about 800 adults nesting in Haleakala N.P. Maui. No estimate for Hawaii, but very small numbers.

Reasons for decline: Evidence that black rats are primary cause of chick mortality at Haleakala. At lower elevations mosquito-borne avian malaria and predation by mongooses may be limiting factors. Formerly collected for human consumption by early Hawaiians.

Protective measures already taken: Protected by State and Federal law. Predator control has been practiced on Maui recently. The breeding ground of the main population lies within national park boundaries.

Measures proposed: Preservation of natural environment including establishment of needed refuges. Control predators where needed. Intensify ecological and life history research.

Measures taken and/or proposed involving NPS: Management programs in Haleakala N. P. is essentially the same. Intensive control of non-native rats, cats, mongooses, pigs and goats is necessary in order to assure continued nesting in favorable habitats. The protective efforts being carried out also include enforcement of Federal regulations which prohibit any form of harassment to the species.

State recognitions: Hawaii recognizes this as being an endangered species.

CALIFORNIA BROWN PELICAN — Pelecanus occidentalis californicus (Ridgway)

Order: PELECANIFORMES — Family: PELECANIDAE

Present distribution: Breeds locally on islands along the Pacific Coast from Anacapa Island, Ventura County, California; Los Coronados, San Martin, and San Benito Islands off the coast of Baja California; islands in the Gulf of California; and south to Tres Marias Islands off Nayarit. Post-breeding movements of birds northward along the Coast generally in early summer and fall.

Present distribution in parks: The major rookery in recent times located within the United States is on Anacapa Island, one unit of the Channel Islands N.M. In addition, pre and post breeding movements along the Pacific Coast have resulted in spring, summer and fall observations of this species at Cabrillo N. M., throughout the Channel Islands N.M., Fort Point N.H.S., Golden Gate N.R.A., Point Reyes N.S., and Redwood N.P. They have been noted as accidental visitors to Lake Mead N.R.A., and a lone individual has been recorded from Petrified Forest N.P. (1960's) and Joshua Tree N.M. (1972).

Former distribution: Same. Historically nested on Santa Cruz and San Miguel Islands, Santa Barbara County and Monterey County, California.

Estimated numbers: Declining about 1,000 to 1,500 adults local to California in 1972. Declining 14 to 18 percent per year in California. Minimum population for Mexico and California over 100,000.

Reasons for decline: Poor reproductive success due to collapsed eggs because of thin shells, suspected to result from food contamination with DDE and/or other pollutants. Tourist disturbance to some Mexican colonies.

Protective measures already taken: State, Federal, and private cooperative research has been directed toward analysis of the thin eggshell condition and resulting reproductive success. Waste discharges from plants being corrected. Population surveys being made by Bureau of Sport Fisheries and Wildlife.

Measures proposed: Continue present research of effects of environmental pollution and life history and reproductive biology, but keep visits to nests to a minimum. Encourage strict regulation of use of persistent chemical pesticides and the discharge of wastes from plants which manufacture these products. Encourage sanctuary status for nesting colonies.

Measures taken and/or proposed involving NPS: Continue protection of habitat and enforcement of Federal regulations which preclude any form of harassment of the species within these parks. Special closure of rookery area at Channel Islands N.M. will be continued and modified as prenesting demands may require. Annual cooperative surveys with the California Department of Fish and Game and Bureau of Sport Fisheries and Wildlife have and continue to provide an excellent coordinated program for their conservation. Encouraging nesting results have been noted since a low success in 1970 when only one fledged young was recorded. Establishment of the Anacapa rookery as a Research Natural Area is under consideration as well as a more intensive elimination program of feral rats.

State recognitions: California recognizes this as being an endangered species.

HAWAIIAN GOOSE (NENE) — Branta sandvicensis (Vigors)

Order: ANSERIFORMES — Family: ANATIDAE

Present distribution: Lava flows between 5,000 and 8,000 feet on the slopes of Mauna Loa and Hualalai, Island of Hawaii. Reintroduction efforts on Maui in Haleakala Crater began in 1962. Nesting occurring but results uncertain.

Present distribution in parks: Wild resident populations on the slopes of Mauna Loa, including Hawaii Volcanoes N.P., have been noted above. In addition to the introduced population at Haleakala N.P. which was supplemented in 1973 by 50 additional pen reared birds, an experimental aviary at Park Headquarters is presently in operation. Success of rearing the penned birds have, to date, not been encouraging. Stocking within Haleakala N.P. has been primarily through releases of birds reared by the Hawaii Division of Fish and Game.

Former distribution: Over a much more extensive area of the Island of Hawaii, Hawaiian Islands. Possibly Island of Maui.

Estimated numbers: Reduced from estimated 25,000 in latter part of 1800's to possibly less than 50. Less than 1,000 estimated in the wild in 1972.

Reasons for decline: Former hunting, predation by introduced mammals, such as dogs, pigs and mongooses, destruction of food and cover by grazing animals.

Protective measures already taken: Protected by Federal and State law. Bureau of Sport Fisheries and Wildlife has annual contract of $25,000 with Hawaii Division of Fish and Game to continue propagation program. The Division is continuing ecological investigations. Four refuges totaling over 50,000 acres of private land have been established in Hawaii through temporary cooperative agreements with landowners and Division of Fish and Game. As of July 1972, releases of captive-reared stock totaled 816 on Hawaii, 297 on Maui. Publicize critical status and aesthetic and scientific values.

Measures proposed: Preservation of natural environment including establishment of needed permanent refuges. Control of predators, feral grazing animals and domestic stock. Continue captive propagation program. Continue reintroduction into former range. Intensify ecological and life history research of the species.

Measures taken and/or proposed involving NPS: Where suitable habitats at Hawaii Volcanoes are obtained through present restorations which involve the control of feral grazing animals, feral predators and other non-native mammals destructive to native vegetation and nesting birds, attempts to rear nene and repopulate suitable portions of the park will occur. Eight one to two acre enclosures at approximate elevations of 3,000 are programmed for stocking one breeding pair of nene in each pen. It is anticipated suitable park habitats will be repopulated from these intensively protected sites. To date two pens have been completed. Construction and/or replacement of approximately 120 miles of boundary and drift fencing is programmed and construction is now in progress. Both of these Hawaiian parks have intensive control programs of non-native plants and animals as well as reforestation projects involving native plants. The protection of habitat and enforcement of Federal regulations are major on going programs in both of the national parks located within the State of Hawaii.

State recognitions: Hawaii also recognizes this as being an endangered species.

CALIFORNIA CONDOR — Gymnogyps californianus (Shaw)

Order: FALCONIFORMES — Family: CATHARTIDAE

Present distribution: Southern coast ranges of California from Santa Clara County south to the Transverse Mountains and north in the Sierra Nevada foothills to Fresno County. There may be a small population in Baja California (Wilbur).

Present distribution in parks: Sightings of foraging condors by fire lookouts in Sequoia N.P. particularly over lower and middle elevation ridges, have been relatively common through the years. Roosting sites have been documented in Sequoia N.P. In addition, rare sporadic observations have been made at Pinnacles N.M. every few years. This species nested in this latter park until 1900. Three unsubstantiated and officially unrecorded sightings were reported during the months of February and March in 1969, 1970 and 1973 at Joshua Tree N.M.

Former distribution: In historical times, from the Columbia River in Oregon, south to northern Baja California, east to southwest Utah and Arizona. Prehistoric remains east to Texas.

Estimated numbers: Annual survey reported minimum counts ranging from high of 53 birds in 1969 to a low of 28 in 1970. Total population estimated at 50 to 60.

Reasons for decline: Disturbance by man, including habitat modification and shooting. Some have been killed after eating strychnine bait or strychnine poisoned animals. Possible shortage of food near nesting sites during breeding period.

Protective measures already taken: Taking and possession prohibited by Federal and State law with penalties up to a year in jail or $1,000 fine or both. Use of poison prohibited on Federal lands within the range of the condor. Two sanctuaries established by the U. S. Forest Service to protect major nesting areas. Development of a condor management plan for the Los Padres National Forest by a full-time condor biologist. An annual condor survey conducted by the California Department of Fish and Game. Appointment of a condor naturalist by the National Audubon Society. Five-year research study by the U. S. Fish and Wildlife Service. Experiments with propagation of related South American condor are in progress at the Patuxent Wildlife Research Center near Laurel, Maryland. Refusal of oil drilling rights in condor breeding area by the Department of the Interior in 1971. Restricted air traffic above

condor sanctuaries. Firearms closures and protection of nest sites by U. S. Forest Service in key condor areas under their control. California Department of Fish and Game have developed operational management plan.

Measures proposed: Constant cooperation of State and Federal Government and private conservation agencies in law enforcement, public education, land management, and research studies. Purchase of private lands within the Sespe Condor Sanctuary and purchase or lease of important feeding areas subject to destruction. Determine the possible benefits of supplemental feeding either in restricting wandering or providing food during critical periods.

Measures taken and/or proposed involving NPS: None specifically. Continued protection of habitat and enforcement of Federal regulations which preclude any form of harassment of wildlife in parks.

State regulations: California recognizes this as being an endangered species.

HAWAIIAN HAWK (IO) — Buteo solitarius (Peale)

Order: FALCONIFORMES — Family: ACCIPITRIDAE

Present distribution: Confined to Island of Hawaii. Locally common on slopes of Mauna Loa, windward and Kona coasts.

Present distribution in parks: Hawaii Volcanoes N.P. reports the presence of this species from park portions of Mauna Loa and Kilauea Caldera.

Former distribution: Same as present.

Estimated numbers: Probably in low hundreds.

Reasons for decline: Alteration of environment by modern man. Habitat destruction and illegal killing which still persists.

Protective measures already taken: Protected by State and Federal laws.

Measures proposed: Preservation of natural environment. Increase law enforcement effort. Initiate ecological and life history research. Surveillance for chemical contamination and other such environmental pollution. Publicize critical status and aesthetic and scientific values. Quarantine on all birds, including caged birds brought into State, to prevent introduction of disease. Initiate experimental propagation program.

Measures taken and/or proposed involving NPS: Control and increased boundary fencing protection to habitats on slopes of Mauna Loa have been programmed, funded and are actively in progress. Trespass grazing by domestic animals and destruction of vegetative communities by other free-ranging non-native animals is being reduced through a parkwide fencing program. Enforcement of all protective Federal regulations is also a major effort at this park. Development of a cooperative "Hawaii Endangered Species Research Station" is under preliminary consideration by the National Park Service and Bureau of Sport Fisheries and Wildlife for study and perpetuation of endangered birds.

State recognitions: Hawaii also recognizes this as being an endangered species.

SOUTHERN BALD EAGLE — Haliaeetus l. leucocephalus (Linnaeus)

Order: FALCONIFORMES — Family: ACCIPITRIDAE

Present distribution: Nests primarily in estuarine areas of Atlantic and Gulf coasts, locally from New Jersey to Texas, and lower Mississippi Valley southward from eastern Arkansas and western Tennessee, and through southern states west to California and Baja California. Some birds wander northward in summer after nesting season to northern United States and southeastern Canada. Adult population of southern Florida essentially resident.

Present distribution in parks: The occurrence of this species has been noted by many parks of the Western Region. A nesting pair fledged one young during July 1973 at Whiskeytown N.R.A. Individuals are generally noted there from early winter until spring. Other parks located in California which have reported the presence of this species are:

Death Valley N.M. - questionable Panamint Mt. sightings in 1950 and 1951.

Joshua Tree N.M. - four spring and fall sightings in western portion of park during period of 1960 to 1973.

Lassen Volcanic N. P. - numerous fairly consistent annual observations.

Point Reyes N. S. - several observations possibly of a resident pair.

Sequoia N. P. - fairly consistent observations adjacent to park in Kaweah River drainage.

Yosemite N. P. - several observations in 1973 support contention this is a resident species in Transition through Hudsonian Life Zones.

Nevada and Arizona park sightings:

Lehman Caves N. M. - Since 1960, several sightings of pairs during entire year in area of park although most are winter and spring observations.

Lake Mead N.R.A. - a rare winter visitant.

Grand Canyon N.P. - accidental visitor but apparently on a year-round basis. Noted in 1929, 1970, 1972.

Petrified Forest N. P. - during recent years a reported nesting species of park.

Former distribution: More extensive, but locally, in the southern United States the same as at present.

Estimated numbers: About 235 active nests in 1965, 99 of which were successful.

Reasons for decline: Increase in human population in primary nesting areas. Disturbance of nesting birds, illegal shooting, loss of nest trees, and possible reduced reproduction as a result of pesticides ingested with food by adults.

Protective measures already taken: Federal laws in the United States protect both the bald and golden eagles. The Bureau of Sport Fisheries and Wildlife and the State game departments enforce these laws. The Bureau is also studying the effects of pesticides on bald eagles. Eight National Wildlife Refuges in the southeastern United States have bald eagles nesting on them. The National Audubon Society is conducting intensive investigations of bald eagle distribution, status, breeding biology, and limiting factors. Florida Audubon Society has obtained agreements with landowners for 2,300,000 acres where nests are located to be treated as bald eagle sanctuaries. The Society makes annual inspections of these nesting sites. Access to eagle nesting areas on National Wildlife Refuges is restricted. Timber cutting, road traffic, and pesticide use have been reduced or eliminated. Cooperation of the public is being sought in reducing human activity in areas adjacent to refuges in vicinity of eagle nests. Potential nest sites (trees) are being preserved in existing and promising nesting areas. The Patuxent Wildlife Research Center has developed facilities where propagation of the northern and southern races is underway. The Center is studying pesticidal contaminants in the environment of the bald eagle and is developing captive propagation methods to produce birds to bolster wild populations or restore breeding pairs to depleted habitat.

Measures proposed: Continued surveillance of nest sites to determine success of production and to learn reasons for failures. Continued research on effects of pesticides and other presumed limiting factors. Educational programs and personal contacts with local residents and landowners in bald

eagle nesting areas to obtain maximum interest and cooperation in protecting these birds and their nests. Secure cooperation of other agencies in reducing and eliminating spraying of DDT.

Measures taken and/or proposed involving NPS: Protection to habitats including components necessary for nesting and enforcement of Federal protective regulations.

State recognitions: California recognizes this as being an endangered species.

PRAIRIE FALCON — Falco mexicanus (Schlegel)

Order: FALCONIFORMES — Family: FALCONIDAE

Present distribution: Breeds from central British Columbia east to southern Saskatchewan and south to Baja California and northern Texas. Winters throughout breeding range and southward to central Mexico.

Present distribution in parks: This species has been recognized as being a scarce resident in Joshua Tree N.M. Four recorded observations have been made during the months of April and June since 1967 with the latest of a pair of birds on June 26, 1973. Its presence during the nesting season has been noted at Pinnacles N. M. One winter visitant was noted in February 1972 at Point Reyes N.S. Collections and observations indicate this species to be a fairly common nesting resident of Death Valley N.M. Lake Mead N.R.A. recognizes it as being an uncommon visitor although nesting was noted near the area's southeast boundary in 1969. Old records indicate its rare visitation in Petrified Forest N.P., however, no recent observations have been made. Chiricahua N.M. records indicate this is a year-round resident.

Former distribution: Same, but less localized.

Estimated numbers: No estimates.

Reasons for decline: Not fully known. Hard pesticides and resulting decline in production of young a factor in some areas. Young taken for falconry.

Protective measures already taken: Protected by Federal law and laws of some states.

Measures proposed: Study to determine decimating factors. Better nest protection. Status surveys.

Measures taken and/or proposed involving NPS: Protection and retention of habitat and enforcement of Federal regulations which preclude any form of harassment of park wildlife.

State recognitions: None.

AMERICAN PEREGRINE FALCON — Falco peregrinus anatum (Bonaparte)

Order: FALCONIFORMES — Family: FALCONIDAE

Present distribution: Breeds from non-Arctic portions of Alaska and Canada south to Baja California (except coast of southern Alaska and British Columbia), central Arizona and Mexico (locally); eastern limits presently follow eastern front of the Rocky Mountains in the United States; distribution local in the southern boreal forests of Canada and a few pairs still breed in Labrador. Winters chiefly in breeding range, but more northern birds move to south. Other races occur on Pacific coast of British Columbia and southern Alaska in Arctic North America and other parts of the world.

Present distribution in parks: Death Valley N.M. records indicate this as being a rare summer, fall and winter visitor. No recent sightings have occurred at Petrified Forest N.P. A specimen and quite evenly distributed observations from 1929 to 1972 throughout most of Grand Canyon N.P. and Grand Canyon N.M. have been recorded. Its presence at Lake Mead N.R.A. is rare and essentially as a summer visitor. The species has been noted, but generally as a rare visitor at Point Reyes N.S. It has not been observed in recent years at Death Valley N.M. or Lassen Volcanic N.P. although it was formerly a visitor to both parks. Extremely limited random sightings at Sequoia N.P. and Kings Canyon N.P. suggests migrations of this species over these parks. There have been no recent reported sightings from Yosemite N.P. Pinnacles N.M. is known to have contained suitable nesting habitat but this activity has not occurred since 1968. Limited observations at Organ Pipe Cactus N.M. for the period 1965 to 1973 suggests this is a winter resident or visitor. The only observation during summer months occurred in 1964. This species possibly exists as a breeding resident of Chiricahua N.M. While current observations do not exist for Saguaro N.M. nor Channel Islands N.M. and several other parks in the Western Region, this species dilemma becomes particularly apparent when comparing historical range distribution and abundance.

Former distribution: Same, but breeding distribution also included Eastern United States south to Georgia; also Ontario, southern Quebec and the Maritime Provinces of Canada.

Estimated numbers: Number of known aeries with adults present in 1969-70, but not all producing young: British Columbia, 19;Alberta, 3;southern Labrador, 2; California, 2; Oregon, 2; western Mexico, 14; Arizona, 2; Colorado,6-8; Wyoming, 1; Montana, 1; Texas, 3-5. Recent information lacking for Washington, Idaho, and Nevada but it has been estimated only 10 to 20 percent of pairs remaining in 1965. A few hundred pairs still

breed in interior Alaska and taiga of northwestern Canada principally along major rivers. Status in eastern Canadian boreal forest unclear but evidently not numerous.

Reasons for decline: All field and laboratory evidence points to cumulative effects of chlorinated pesticides and their breakdown products obtained from its prey, especially DDT and DDE, which have increased adult mortality and reduced production of young by affecting reproductive mechanisms and causing eggs to become thin-shelled or otherwise non-viable. Habitat destruction and collection of young and adults for falconry have been serious factors.

Protective measures already taken: Peregrine falcons are protected by Federal law and by States in the United States. Propagation techniques are being studies by Government and private investigators and at Cornell University.

Measures proposed: Eliminate use of food chain pesticides where possible. Responsible agencies should set appropriate regulations for the protection of this species. Include in international conservation agreements. Develop methods for captive propagation to bolster wild population. Initiate management-oriented research and investigate the establishment of refuges around known eyries.

Measures taken and/or proposed involving NPS: Protection to and retention of park habitats. Serious decimations of populations by falconers throughout its range requires increased enforcement activity of regulations which protect this species in most of its range including all of the national parks.

State recognitions: California and Nevada recognize this as being an endangered species.

CALIFORNIA BLACK RAIL — Laterallus jamaicensis coturniculus (Ridgway)

Order: GRUIFORMES — Family: RALLIDAE

Present distribution: This tiny rail is so elusive and secretive that it is seldom seen, and consequently little is known in regard to its present or former distribution. Usually it is associated with pickleweed along the tidal marshes from Tomales Bay and San Francisco, south and casually inland to Stockton, Riverside, and Salton Sea, California. Substantial numbers along Colorado River.

Present distribution in parks: This is a known nesting species in the Tomales Bay portion of Point Reyes N.S.

Former distribution: Thought to be about the same as today.

Estimated numbers: Unknown.

Reasons for decline: A reduction in population is thought to be due to a reduction in tidal marsh habitat by filling, draining, and/or pollution, channelization and phreatophyte control along Colorado River.

Protective measures already taken: Attempts are being made to preserve remaining habitat and maintain better water quality. Studies on ecology, distribution and abundance being made by State and Federal biologists in conjunction with studies of other rails.

Measures proposed: Protect available habitat, especially tidal marshes, from being destroyed.

Measures taken and/or proposed involving NPS: Protection to and retention of limited tidal marsh habitat in areas administered by the National Park Service and continued enforcement of Federal regulations against any form of harassment.

State recognitions: California does not recognize this species as being endangered, but classifies it as a rare species.

SPOTTED OWL — Strix occidentalis (Xantus)

Order: STRIGIFORMES — Family: STRIGIDAE

Present distribution: (Divided into three subspecies). Resident in Pacific coastal and Cascade Mountain forests from southwestern British Columbia south to northwestern California; also Sierra Nevada and mountains of southern California; also southern Rocky Mountains from central Colorado, south through eastern Arizona and New Mexico; and mountains of Mexico in Sonora, Michoacan, Guanajuato, and Nuevo Leon.

Present distribution in parks: While identifications mentioned herein are generally limited to the species and not the California (S. o. occidentalis)or northern (S. o. caurina) subspecies, data suggests that the California form is found in parks located in the Sierra Nevada and the northern form in coastal mountain parks. The species has been recorded from five national parks in California. Redwood N.P. has not recorded this bird but it is found in several California State Parks to the south. It is a resident nesting species of both Point Reyes N.S. and Muir Woods N.M. Observations in these two parks indicate the species is not common but that their presence is relatively constant including those of juveniles during summer months. Sequoia, Kings Canyon and Yosemite National Parks have recorded the presence of this species through observations and road kills. The presence of juveniles has confirmed nesting activities and the species is considered to be a permanent resident of mid-Sierra elevations (4,000 - 7,000 ft.). Recent observations or specimen collections exist in these parks.

Former distribution: The same as at present but including some localities from which it is apparently now extirpated in western Texas and Utah.

Estimated numbers: Total population unknown.

Reasons for decline: Removal of old-growth timber--its required habitat, in the Cascades and coast range of the Northwest; disturbance of limited areas of habitat in mountain canyons by recreational and construction activities. Extremely sedentary nature retards movement of birds to new and more favorable habitat when old sites are destroyed.

Protective measures already taken: Some habitat is preserved at lower altitudes in Olympic and Mt. Rainier N. P. Forest management agencies have been alerted to the incompatability of this species with present

forest management practices in the Northwest. A study of the ecology and populations was begun at the Oregon Cooperative Wildlife Research Unit in spring of 1972 in cooperation with the U. S. Forest Service.

Measures proposed: Locate existing breeding pairs. Absolute protection of the environment of known nesting sites in all parts of its range. Preliminary information indicates each pair of S.o.caurina occupies and requires 300 to 600 acres of old-growth timber. Thorough study of its ecological requirements and limiting factors.

Measures taken and/or proposed involving NPS: Continue protection of mature climax forest habitats and enforcement of Federal regulations which prohibit any form of harassment to this species in these parks.

Continue survey of range distribution and population densities in cooperation with the California Department of Fish and Game and U. S. Forest Service in parks located within California.

State recognitions: None.

HAWAIIAN CROW (ALALA) — Corvus tropicus (Gmelin)

Order: PASSERIFORMES — Family: CORVIDAE

Present distribution: Resident locally in forested areas and higher elevations on North and South Kona and Kau Districts of the Island of Hawaii, including ranching country.

Present distribution in parks: This species formerly ranged into Hawaii N.P. but is not currently known to occur there.

Former distribution: Same as present but more generally distributed from Kau to Puuwaawaa from 1,000 to 8,000 feet elevation.

Estimated numbers: About 50. In May 1972, 17 seen by Bureau of Sport Fisheries and Wildlife and Hawaii Division of Fish and Game personnel on slopes of Mt. Hualalai, Hawaii.

Reasons for decline: Shooting. Alteration of environment by modern man, especially destruction. Possibly avian diseases. Destruction of native forest by domestic livestock.

Protective measures already taken: Protected by State and Federal law. Status and ecological study initiated.

Measures proposed: Preservation of natural environment and establishment of needed refuges and sanctuaries. Initiate propagation program and develop techniques for stocking suitable habitat. Increase patrol and/or law enforcement effort. Intensify ecological and life history research of the species. Publicize critical status and aesthetic and scientific values. Quarantine on all birds, including cage birds brought into the State to prevent introduction of diseases. Control or elimination grazing by feral grazing animals and domestic livestock in key habitat areas.

Measures taken and/or proposed involving NPS: After native habitat restorations are determined to be adequate and future protection insured against further destructive actions of non-native grazing mammals, cooperative attempts with the Bureau of Sport Fisheries and Wildlife and State of Hawaii for reintroducing a breeding nucleus of this species into the park is anticipated. Enforcement actions will be continued

involving appropriate Federal regulations against harassments of park wildlife and destruction of native habitats by trespass domestic stock grazing.

State recognitions: This species has been designated as being endangered by the State of Hawaii.

CRESTED HONEYCREEPER (AKOHEKOHE) Palmeria dolei (Wilson)

Order: PASSERIFORMES Family: DREPANIDIDAE

Present distribution: Very restricted; confined to rain forests on the northeast slopes of Haleakala between 6,000 and 7,000 feet, Island of Maui, Hawaii.

Present distribution in parks: Resident in Kipahulu Valley, Haleakala N.P.

Former distribution: Mountain forests of Molokai and Maui, Hawaii.

Estimated numbers: Unknown.

Reasons for decline: Probably adversely affected by introduced birds, diseases and encroaching civilization on the forest habitat. Noted to have deserted forests opened by invasion of cattle.

Protective measures already taken: Protected by State law. Selective limitation by State and Federal Governments of introduction of foreign bird species. Acquisition and protection of large area in Kipahulu Valley, Maui, by The Nature Conservancy for inclusion in Haleakala N.P. as a wilderness area.

Measures proposed: Preservation of additional natural environment, including establishment of needed refuges. Prevent introduction of harmful insects, plants, and animals. Control of feral grazing animals. Initate ecological and life history research of the species. Publicize critical status and aesthetic and scientific values. Quarantine on all birds, including cage birds brought into the State to prevent introduction of diseases. Initiate propagation program and develop techniques which may be applied to Hawaiian forest birds.

Measures taken and/or proposed by NPS: Protection to and retention of native park habitats. Enforcement of Federal regulations protecting all wildlife from harassment. Research oriented toward more effective management of the biological resources of Haleakala N.P. requires increased attention. Activation of a full-time investigative program in the park is anticipated through establishment of a Cooperative Research Unit by the NPS at University of Hawaii.

Recognitions by States: Hawaii recognizes this as being an endangered species.

AKIAPOLAAU — Hemignathus wilsoni (Rothschild)

Order: PASSERIFORMES — Family: DREPANIDIDAE

Present distribution: Confined to upper forests of Mauna Kea and Mauna Loa, Island of Hawaii. Three sightings in the Kilauea Koa Forest made in 1970. Seen in recent years in mamane forest of Mauna Kea. Seen in very small numbers by various observers in 1972 in Keahou Forest Reserve on Island of Hawaii.

Present distribution in parks: Formerly seen on rare occasions in Hawaii Volcanoes N.P. Now only in nearby habitats of Kilauea Forest Reserve.

Former distribution: Much more widely distributed and more numerous than at present.

Estimated numbers: Unknown.

Reasons for decline: Introduction of foreign birds, avian diseases, and insect vectors; elimination and alteration of natural forest by man and introduced ungulates, including domestic livestock and feral sheep and goats.

Protective measures already taken: Protected by State law. Selective limitation by State and Federal Governments of introduction of foreign species of birds. Limited field investigations are underway to develop guidelines for action programs.

Measures proposed: More complete control of introduction of foreign species of birds and mammals and reduction of those already present in range of this species. Restoration and protection of natural forest habitat and establishment of wildlife refuges. Negotiations underway between Nature Conservancy and Bishop Estate for establishing the Kilauea Forest Reserve as a bird sanctuary to protect several threatened and more common birds. Study of ecological requirements and limiting factors. Publicize critical status and aesthetic and scientific values. Quarantine on all birds, including cage birds brought into the State to prevent introduction of diseases. Initiate propagation program and develop techniques that could be applied to Hawaiian forest birds.

Measures taken and/or proposed involving NPS: Restoration of and protection to native park ecosystems and enforcement of Federal

regulations. Present resources management projects such as the extensive rehabilitation and construction of new fences which will prohibit destructions of park ecosystems by trespass cattle and feral mammals such as goats plus reforestation of native vegetation are examples. Possible establishment of a cooperative Hawaiian Endangered Species Research Station is presently under consideration by the Bureau of Sport Fisheries and Wildlife and National Park Service.

State recognitions: This species is considered to be endangered by the State of Hawaii.

HAWAII AKEPA (AKEPA) — Loxops coccinea coccinea (Gmelin)

Order: PASSERIFORMES — Family: DREPANIDIDAE

Present distribution: Confined to very limited areas of native forests and widely scattered on Mauna Kea, Mauna Loa and Hualalai on the island of Hawaii.

Present distribution in parks: Formerly seen on rare occasions in Hawaii Volcanoes N.P; now only in nearby habitats of the Kilauea Forest Reserve.

Former distribution: Same as present but much more widespread. Found in all native forests according to Munro.

Estimated numbers: No estimate, but very low.

Reasons for decline: Introduction of foreign birds, avian diseases, and insect vectors. Elimination and alteration of native forest by man and introduced ungulates, including domestic livestock and feral goats.

Protective measures already taken: Protected by State law. Selective limitation by State and Federal Government of introduction of foreign species of birds. Field investigations are underway to develop guidelines for action programs.

Measures proposed: Preservation of natural environment and establishment of wildlife refuges. Control of domestic and feral grazing animals. Conduct ecological and life history research of the species. Publicize critical status and aesthetic and scientific values. Quarantine on all birds including cage birds brought into the State to prevent introduction of disease. Captive propagation and develop techniques applicable to Hawaiian forest birds. Negotiations underway between Nature Conservancy and Bishop Estate for establishing the Kilauea Forest Reserve as a bird sanctuary. Protection to this species, Akiapolaau, Creeper plus other more common birds would be afforded through fencing and feral animal removal projects and caretakers/scientific staffing.

Measures taken and/or proposed involving NPS: Restoration and protection of native park ecosystems and enforcement of Federal regulations. ~~Possible~~ Possible establishment of a cooperative Endangered Species Research Station presently under consideration by the National Park Service and Bureau of Sport Fisheries and Wildlife.

State recognitions: This species is considered to be endangered by the State of Hawaii.

MAUI AKEPA (AKEPUIE) — Loxops coccinea ochracea (Rothshild)

Order: PASSERIFORMES — Family: DREPANIDIDAE

Present distribution: If extant, confined to windward forest of Haleakala, Island of Maui, Hawaii.

Present distribution in parks: One male was reported to have been sighted above Kipahulu Valley, Haleakala N.P. in the 1972 report of the Waihoi Valley Project. Previous park records indicate that three birds were seen on the south slope of Haleakala on December 24, 1950.

Former distribution: More widely distributed in native forest than at present.

Estimated numbers: No estimate.

Reasons for decline: Probably the effect of encroachment of civilization on the native forest habitat, introduced diseases, and disease-carrying insects.

Protective measures already taken: Protected by State law. Selective limitation by State and Federal Governments of introduction of foreign species of birds. Field investigations are underway to develop guidelines for action programs.

Measures proposed: More complete control of introduction of foreign species of birds and mammals and reduction of those already present in range of this species. Restoration and protection of natural forest habitat. Initiate or continue ecological and life history research particularly to determine ecological requirements and limiting factors. Publicize critical status and aesthetic and scientific values. Quarantine on all birds including cage birds brought into the State, to prevent introductions of disease.

Measures taken and/or proposed involving NPS: Continue protection and restoration efforts of native park ecosystems and enforcement of Federal regulations prohibiting harassment of wildlife. Initiation of research programs involving the many threatened birds of Haleakala N.P.

State recognitions: The species is considered to be endangered by the State of Hawaii.

OU

Psittirostra psittacea (Gmelin)

Order: PASSERIFORMES

Family: DREPANIDIDAE

Present distribution: Islands of Kauai (Alakai Swamp) and Hawaii in Hawaii.

Present distribution in parks: Observations of this resident of Hawaii Volcanoes N.P. only rarely reported. One male was observed flying out of Kilauea Caldera near the Volcano House during the summer of 1972 and one reported from near Park Headquarters on July 19, 1970.

Former distribution: Islands of Kauai, Oahu, Molokai, Maui, and Hawaii.

Estimated numbers: Unknown.

Reasons for decline: Possibly introduced avian diseases and parasites. Possibly alteration of habitat by invasion of foreign plants or browsing by feral pigs, goats and domestic livestock.

Protective measures already taken: Protected by State law. Selective limitation by State and Federal Governments of introduction of foreign species of birds. Establishment of the 10,000-acre Alakai Swamp Wilderness Preserve by Hawaii State regulation which prohibits disturbance of the major habitat on Kauai. Field investigations in progress.

Measures proposed: Preservation of natural environment including establishment of needed refuges and prevent introduction of harmful insects, plants, and animals. Control of feral grazing animals and domestic stock. Initiate ecological and life history research. Initiate propagation program and develop techniques which may be applied to Hawaiian forest birds. Publicize critical status and aesthetic and scientific values. Quarantine on all birds, including cage birds brought into the State, to prevent introduction of disease.

Measures taken and/or proposed involving NPS: Continue restoration and protection efforts of native park ecosystems and enforcement of Federal protective regulations. As with other species of Hawaiian birds in Hawaii Volcanoe N.P., present investigations as to possible effects of feral pig rooting activities with creation of micro ecosystems suitable for propagation of non-endemic mosquitoes and

possible relationship to welfare of this and other species of birds has been initiated. Possible development of a cooperative Hawaii Endangered Species Research Station under consideration by the National Park Service and Bureau of Sport Fisheries and Wildlife. Conceivably the study and perpetuation of endangered forest birds of the two Hawaiian parks as well as other suitable habitats within the State would become a multiagency Federal and State project.

State recognitions: The species is considered to be endangered by the State of Hawaii.

PERIPHERAL BIRDS

A peripheral species or subspecies is one whose occurrence in the United States is at the edge of its natural range and which is threatened with extinction within the United States although not in its range as a whole. Special attention is necessary to assure retention in our Nation's fauna.

Zone - Tailed Hawk, Buteo albonotatus. One observation at Death Valley N.M. in January 1934. Old records from 1939 and 1953 exist for this species at Organ Pipe Cactus N.M., 1968 and 1970 at Saguaro N.M. and several predominately late summer observations at Chiricahua N.M.

Northern Gray Hawk, Buteo nitidus maximus. The most recent recording of this accidental visitor occurred at Chiricahua N.M. in December of 1966.

Northern Black Hawk, Buteogallus a. anthracinus. An April 1973 observation of one pair near Walnut Canyon N.M. has been reported. Four unconfirmed sightings through the years at Organ Pipe Cactus N.M. are considered to be accidental as preferred habitat of running streams within the park are essentially non-existent.

Elegant tern, Thalasseus elegans. A recorded summer visitor to Point Reyes N.S.

Northern Xantus' Murrelet, Endomychura hypoleuca scrippsi. Considered to be a common breeding bird at the Channel Islands N.M. particularly at Santa Barbara Island.

Ferruginous Owl, Glaucidium brasilianum. While considered to be an uncommon resident of or near park desert washes, this species has been recorded as a nesting species in Organ Pipe Cactus N.M.

Western Blue-Throated Hummingbird. Lampornis clemenciae bessophilus. Spring and summer observations at Chiricahua N.M. suggest accidental occurrence and nesting. Observations during 1972 occurred in April and July while the species was commonly seen in several locations in this park during 1973. Two sightings of the species at Organ Pipe Cactus N.M. in January 1973 are considered as reflecting the accidental occurrence of the bird in this park.

Northern Violet-Crowned Hummingbird, Amazilia verticalis ellioti. Thought to be a breeding resident from at least late May through August at Chiricahua N. M.

Coppery-Tailed Elegant Trogon, Trogon elegans canescens. Reportedly a nesting species on lands adjacent to but rare within Coronado N. Memorial and apparently a summer breeding resident of Chiricahua N.M. where nesting has been recorded for the past 7 years. One unusual winter observation in November 1964 has been noted.

Northwestern Rose-Throated Becard, Platypsaris aglaiae richmondi. Has been noted at Coronado N. Mem. and while unconfirmed, as still occurring in Chiricahua N.M. where it was known to have nested during July of 1954.

Olive Warbler, Peucedramus, taeniatus arizonae. Latest observation at Saguaro N.M. was during April 1967.

Dickey's Varied Bunting, Passerina versicolor dickeyae. Organ Pipe Cactus N.M. reports only limited observations but it is felt the species may be more common and may even nest in this park.

Arizona Grasshopper Sparrow, Ammodramus savannarum ammolegus. Organ Pipe Cactus N.M. has occasionally noted this species as a rare winter resident.

Northern Rufous-Winged Sparrow, Aimophila c. carpalis. An uncommon possibly year-round resident most often seen at Quitobaquito Spring, Organ Pipe Cactus N.M. All park records are from middle of September through the middle of April but park believes nesting may be occurring.

STATUS-UNDERTERMINED BIRDS

A status-undetermined species or subspecies is one that has been suggested as possibly threatened with extinction, but about which there is not enough information to determine its status. More information is needed.

Wood Ibis, Mycteria americana. A rare winter resident to Death Valley N.M.

White-Faced Ibis, Plegadis chihi. Lake Mead N.R.A. records this as an uncommon transient. Death Valley N.M. has had numerous observations plus one specimen dating back to 1891. It is recognized as being primarily a migrant during spring and fall migrations. No records exist here for the period of October through March.

Ferruginous Hawk, Buteo regalis. Primarily a winter visitant to Point Reyes N.S. While apparently not as common at Joshua Tree N.M. it nevertheless has also been recorded during winter months in western portions of this park. Death Valley N.M. has noted its rare presence during most months of the year. While no nesting has been observed this may occur. A definite winter time preference for lowlands and summer preference for higher park elevations has been noted. Lake Mead N.R.A., Grand Canyon N.M. and Grand Canyon N.P. note this as being an uncommon winter visitant. Except for two observations during July of 1937 and 1966, the occurrence of this species at Walnut Canyon N.M. has been during winter months. It is an accidental visitor to Organ Pipe Cactus N.M. and was apparently a former visitor to Saguaro N.M.

American Osprey, Pandion haliaetus carolinensis. Rarely observed at Whiskeytown N.R.A., it nevertheless is known to be a breeding resident. One successful nesting during 1973 resulted in three fledged young. This is also recorded as a breeding species of Redwood N.P. and Point Reyes N.S.. Sequoia and Kings Canyon N.P's., Yosemite N.P., Joshua Tree N.M. and Death Valley N.M. have noted apparent migrating ospreys. The occasional summer visitation of this species at Lake Mead N.R.A., Grand Canyon N.M. and Grand Canyon N.P. suggests possible breeding along the reservoirs and waterways of these parks.

Audubon's Caracara, Carocara cheriway audubonii. Uncommonly observed throughout the year at Organ Pipe Cactus N.M., particularily in eastern portions of the park. Known to nest adjacent to the park's east boundary where they are more commonly observed.

Northern Aplomado Falcon, Falco fermoalis septentrionalis. A May 1973 observation thought to have been this species was recorded at Chiricahua N. M.

Prairie Pigeon Hawk, Falco columbarius richardsonii. Observations and/or specimens of the species have occurred in several parks of the Western Region. It is not known, however, if they include this particular subspecies. Lake Mead N.R.A., Grand Canyon N.M., Grand Canyon N.P., Death Valley N.M., Joshua Tree N.M., Yosemite N.P. and Lassen Volcanic N. P. have noted its presence. This rare migrant and possibly winter resident of Organ Pipe Cactus N.M. is more often noted during the fall migration period rather than during the spring of each year.

Western Snowy Plover, Charadius alexandrinus nivosus. Rare spring and fall observations of this species, not identified to subspecies, have occurred at Death Valley N.M. and Lake Mead N.R.A.

Mountain Plover, Eupoda montana. This is an exceptionally rare visitor to Point Reyes N.S. One observation exists for the Lake Mead N.R.A. and it is recognized as being a rare summer and fall migrant to Death Valley N.M. where a specimen has been collected.

Northern Long-Billed Curlew, Numenius americanus parvus. All observations of this species at Point Reyes N.S. occurred in coastal grasslands during 1965. While one pair remained on the shoreline of Lake Mohave through the 1972 breeding season, this species continues to be recognized as being a rare transient visitor to the Lake Mead N.R.A. It is also considered to be a rare spring and fall migrant to Death Valley N.M. Its rarity as a migrant at Channel Islands N.M. has also been noted with only one observation during July 7, 1973.

Western Burrowing Owl, Speotyto cunicularia hypugaea. Lake Mead N.R.A., Death Valley N.M. and Joshua Tree N.M. record this as a rare year-round resident of these parks. Channel Islands N.M. has noted this species as being both a migrant and breeding season resident.

THREATENED

M A M M A L S

IN THE WESTERN REGION

HAWAIIAN HOARY BAT — Lasiurus cinereus semotus (Peale & Beauvois)

Order: CHIROPTERA — Family: VESPERTILIONIDAE

Present distribution: Specimens recorded from Kauai, Oahu, Maui, and Hawaii, but probably occurs on all main islands at least sporadically, and casually in flight over offshore islets.

Present distribution in parks: Hawaii Volcanoes N.P. has recorded the presence of this resident species on rare occasions over forested areas of the park.

Former distribution: Same.

Estimated numbers: Possibly numbers of a few thousand.

Reasons for decline: Apparent loss of habitat due to removal of sheltering tree growth in many areas may have brought about a decline in numbers.

Protective measures already taken: Field research program underway to determine actual status and base guidelines for possible future action. Considered an endangered species by State of Hawaii, thus is protected by law.

Measures proposed: Strictly prohibit collecting even for legitimate scientific purposes; initiate or continue life history studies, possibly through a banding program.

Measures taken and/or proposed involving NPS: None specifically. Park habitat restoration projects at Hawaii Volcanoes N.P. and enforcement of Federal regulations prohibiting any form of harassment will continue.

State recognitions: Hawaii recognizes this as being an endangered species.

SPOTTED BAT — Euderma maculatum (J. A. Allen)

Order: CHIROPTERA — Family: VESPERTILIONIDAE

Present distribution: One or two records (except Texas and New Mexico, which have more) from each of the Southwestern States and the Mexican State of Durango. It has been found as far north as Yellowstone County, Montana, and Canyon County, Idaho, and as far east of Brewster County, Texas.

Present distribution in parks: One old 1939 record of the presence of this species near Joshua Tree N.M. exists. Lake Mead N.R.A. has noted its rare presence.

Former distribution: Probably same as present.

Estimated numbers: None available, but the species appears to be extremely uncommon. About 70 individuals have been collected since the species was first described.

Reasons for decline: Probably always was uncommon.

Protective measures already taken: None.

Measures proposed: Continue research for information on habits, habitat, and distribution. David Easterla has recently been studying this species in southwest Texas and has successfully captured, observed,measured, banded, and released a number of spotted bats.

Measures taken and/or proposed involving NPS: None specifically beyond maintenance and protection of park habitats and enforcement of applicable Federal regulations.

State recognitions: Nevada recognizes this as being an endangered species.

KAIBAB SQUIRREL — Sciurus kaibabensis (Merriam)

Order: RODENTIA — Family: SCIURIDAE

Present distribution: Kaibab Plateau on north side of Grand Canyon, Arizona, an area of approximately 30 by 70 miles; closely associated with yellow pine. Apparently restricted to Kaibab National Forest and Grand Canyon National Park lands.

Present distribution in parks: Extensive observation and related records from 1934 to present and 21 specimens exist in the collection of Grand Canyon N.P.

Former distribution: Probably the same since historic times.

Estimated numbers: Approximately 4,000 in 1968.

Reasons for decline: Automobile traffic and disease the most conspicuous causes of mortality. Possibly the long history of complete fire prevention on the Kaibab area has resulted in a deterioration of the habitat for this species.

Protective measures taken: Complete legal protection for many years. North Rim of Grand Canyon National Park serves as a sanctuary.

Measures proposed: Continue complete legal protection. Preservation of Gambel oak and yellow pine (squirrel feeds on the cambium layer). Efforts should be made to get a captive breeding program into operation.

Measures taken and/or proposed involving NPS: Continue protection of park habitats and enforcement of Federal protective regulations. Population and related studies such as effects of fire as a management tool to be continued by park research biologists. Continue participation in cooperative meetings of Federal and Arizona Department of Game and Fish representatives in order to coordinate overall management efforts. This species was introduced in 1972 by the State of Arizona into areas on the Shivwits Plateau adjacent to Lake Mead N.R.A. Possibly range extension and/or evaluation of Lake Mead N.R.A. park lands as to their suitability for future introduction can be reasonable assumptions if the initial relocation is successful.

State recognitions: None.

WHALES — Toothed Whales (Suborder Odontoceti)

Order: CETACEA — Baleen Whales (Suborder Mysticeti)

Among the animals threatened with extinction, the whales present a special case. It seems impractical here to consider them in the same manner as the other mammals. Except for the sirenians, these large, intelligent animals are the earth's only completely aquatic mammals; from birth to death they live in a marine environment. All the species presently threatened are the so-called Great Whales. These large mammals have been ruthlessly exploited by a loosely regulated whaling industry for decades. It is primarily this exploitation that has pushed some species of whales to the brink of extinction and seriously threatens others. The Great Whales spend at least part of their life on the high seas; they are an international resource and no nation has complete jurisdiction over them.

The whales received some consideration under the 1937 International Convention for the Regulation of Whaling, when the Convention established an International Whaling Commission. That Commission was provided limited management capacity and little enforcement authority. Membership in the Commission is voluntary. Many whaling nations are not members; therefore, are not subject to the Commission's regulations.

It is only during recent years that some of the whaling nations have acknowledged their obligation to manage whale stocks in a responsible manner. In 1971, some whaling nations agreed to allow international observers aboard their whaling vessels and to inspect their whaling stations to insure better compliance with whaling agreements. Serious consideration is now being given to conducting research in an effort to determine the status of various species of whales and to manage them in accordance with research findings. It is only when such knowledgeable management programs become realities that we can assume the threat of extinction has lessened.

With exception of the sperm whale, all species in American waters that are in jeopardy are baleen whales (suborder Mysticeti); the sperm is a toothed whale (suborder Odontoceti).

Sperm Whale or Cachalot, Physeter catodon (Linnaeus). Polar, temperate and tropical seas; occurs off both the Atlantic and Pacific coasts of North America. Still widely hunted; not protected by international agreement. Considered of special concern because of the numbers that are being commercially taken, and because of lack of international protection.

Gray Whale, Eschrichtius robustus (Lilljeborg). Distributed in eastern North Pacific, Alaska to Baja California; also a population in western North Pacific. Populations of this whale were severely depleted during the 19th century by over-exploitation. Protection provided by a 1938 international agreement has helped the gray whale recover. The eastern Pacific population appears stable, although concern still exists over the status of the western Pacific population. The increasing numbers and apparent stable population is a good example of the ability of an animal to recover when adequate protection is provided.

Considered as in need of attention of concern over western Pacific population and lack of effective management programs. Annual spring and fall migrations of the eastern Pacific population from northern Pacffic and Arctic waters to breeding grounds off Baja California provide a significant wildlife display at Redwood N.P., Point Reyes N.S., Channel Islands N.M. and Cabrillo N.M. The concentrations are most significant at Cabrillo N.M. where large numbers can be readily observed immediately adjacent to the California shoreline thereby providing observers opportunity to view one of the major remaining migrations of mammals in North America.

Blue Whale, Balaenoptera musculus (Linnaeus). Cosmopolitan; occurs along both the Atlantic and Pacific coasts of North America. Numbers greatly reduced through excessive exploitation; protected by international agreement since 1966. Status a matter of special concern because of decimation of numbers prior to protection and apparent scarcity of the species at the present time.

Finback Whale, Balaenoptera physalus (Linnaeus). Cosmopolitan; occurs along both the Atlantic and Pacific coasts of North America. Still widely hunted; not protected by international agreement. Considered in peril because of uncertainty of the effects of continued exploitation, and lack of international protection.

Sei Whale, Balaenoptera borealis (Lesson). Cosmopolitan; occurs off both the Atlantic and Pacific coasts of North America. Still widely hunted; not protected by international agreement. Considered jeopardized because of the effects of wide-spread exploitation, and the lack of adequate protection.

Humpback Whale, Megaptera novaeangliae (Borowski). Cosmopolitan; occurs along both the Atlantic and Pacific coasts of North America. Numbers greatly reduced because of excessive exploitation prior to protection; protected, since 1966, by international agreement. Considered in need of special attention due to greatly reduced population.

Right Whale, Eubalaena glacialis (Muller). Polar, temperate and tropical seas; in North America roughly from Iceland to Bermuda in the

western Atlantic, and from Alaska to Baja California in the eastern Pacific. Population may now be stable; protected by international agreement. Considered in need of attention because of greatly reduced numbers.

Bowhead Whale, Balaena mysticetus (Linnaeus). Northern oceans, south to the Pribilof Islands and the Gulf of St. Lawrence. Greatly depleted in numbers; protected by international agreement and population may now be stable. Considered as in need of careful watching because of its low population level.

MEXICAN WOLF — Canis lupus baileyi (Nelson and Goldman)

Order: CARNIVORA — Family: CANIDAE

Present distribution: Extreme southern Arizona, east to west Texas, south to San Luis Potosi in Mexico.

Present distribution in parks: Latest sign of this species observed in Saguaro N.M. during June of 1968. Previous signs and lack of recent recordings suggest a further decrease in numbers and distribution of this animal.

Former distribution: About the same as present distribution, but within this range the Mexican wolf has been eliminated from many areas.

Estimated numbers: Not known; at least six specimens have been reported in Arizona and Texas since 1968.

Reasons for decline: Heavy hunting and trapping pressure to eliminate the wolf as a predator on domestic livestock.

Protective measures already taken: Defenders of Wildlife has paid livestock damage costs, and is attempting to purchase land; Federal predator control operations have ceased in the area. The Arizona Game and Fish Department protects wolves in Arizona with a no open season regulation.

Measures proposed: Locate areas where populations occur; educate the public to avoid hunting and trapping of wild canids in these areas; establish sanctuaries in west Texas and eastern Arizona to protect resident populations and/or migrants from Mexico.

Measures taken and/or proposed involving NPS: None specifically. Protection to park habitats and enforcement of Federal regulations prohibiting any form of harassment of park wildlife will be continued.

State recognitions: None.

SOUTHERN SEA OTTER — Enhydra lutris nereis (Merriam)

Order: CARNIVORA — Family: MUSTELIDAE

Present distribution: Off California coast, Santa Barbara County to Santa Cruz County.

Present distribution in parks: Northerly and southerly extensions of this species range distribution has resulted in natural accidental movements into waters of the Point Reyes N.S. If habitat requirements are suitable in future years, this natural extension may result in significant reestablishments in the waters off Point Reyes N.S. and southerly in the Channel Islands N.M.

Former distribution: Pacific coast, Washington to central Baja California.

Estimated numbers: Official census (1957) reported 638. In 1964 Kenyon counted 396 and estimated a total 500 in California waters. California Department of Fish and Game estimated 1,200 animals in 1969.

Reasons for decline: Slaughtered for furs since latter half of 18th century, and later poaching by Japanese and Russians.

Protective measures already taken: Protected by State law and Marine Mammal Protection Act of 1972.

Measures proposed: Continued protection by California and Federal law. According to Kenyon the sea otter does not range regularly beyond the 3-mile limit off the coast of California.

Measures taken and/or proposed involving NPS: Federal Research Natural Area has been established at Point Reyes N.S. in conjunction with the State of California designation of offshore Marine Life Refuges. This cooperative Federal-State protection to terrestrial and marine environments may have beneficial effects upon this species. Protection of habitats and enforcement of Federal regulations including newly promulgated special regulations affecting the commercial harvest of natural and other marine resources at Channel Islands N.M. will be continued.

State recognitions: None.

TULE ELK OR DWARF ELK — *Cervus nannodes* (Merriam)

Order: ARTIODACTYLA — Family: CERVIDAE

Present distribution: Three major, well-separated populations in California. Two of these--one in the Cache Creek area (Colusa, Lake, and Yolo Counties) and one in Owens Valley (Inyo County)--are free-roaming. The third herd is fenced in the Tule Elk State Park near Tupman (Kern County). Five main herds in the Owens Valley.

Present distribution in parks: None.

Former distribution: Common prior to 1860 in nearly the entire San Joaquin and Sacramento Valleys, California (Butte to Kern Counties); restricted to the Buttonwillow Ranch, western Kern County, by 1905; total in 1932, 170.

Estimated numbers: In 1970, the California Fish and Game Department maintained the Owens Valley herds at between 250 and 300 animals and about 140 in the Cache Creek area, Yolo County. Game Department's (1971) policy set 490 elk for Inyo County's five herds.

Reasons for decline: Hunted for meat and hides during mid 1800's total population about 28 in 1885. Encroachment of civilization and cultivation have reduced available range, and cattlemen and farmers claim competition with stock and damage to crops and fences.

Protective measures already taken: Herds are carefully managed and protected from indiscriminate hunting by State law. Establishment of Tule Elk State Park. Organization of the Committee for the Preservation of the Tule Elk, dedicated to the protection of this species. Livestock grazing on portion of Inyo National Forest used by Goodale segment of Owens Valley herd restricted since 1965. Five tule elk from Tupman herd transplanted to Whitney area in January 1972 to establish new herd. State law prohibits hunting tule elk until numbers reach 2,000. Interagency committee formed to evaluate proposed transplant sites.

Measures proposed: The Committee for the Preservation of the Tule Elk is attempting to set aside 240 square miles in Owens Valley (owned

by the city of Los Angeles, but leased to cattlemen) as a refuge. Initiate studies to determine the optimum numbers of elk that a given habitat can support. Transplant planned for San Luis National Wildlife Refuge in San Joaquin Valley and onto other Federal lands.

Measures taken and/or proposed involving NPS: Interagency committee mentioned above included representative from NPS. Subsequent recommendation for introduction of this species into the Point Reyes N.S. Planning, programming and interagency discussions between the park and California Department of Fish and Game have ensued for establishing an eventual herd of approximately 300 animals in the Tomales Point area.

State recognitions: None.

SONORAN PRONGHORN — Antilocapra americana sonoriensis (Goldman)

Order: ARTIODACTYLA — Family: ANTILOCAPRIDAE

Present distribution: Found in the United States only in a limited portion of the Cabeza Prieta Game Range and the Organ Pipe Cactus National Monument, Arizona. Present Mexican range is unknown, but believed to be confined to northwest Sonora from about 100 miles northwest of Hermosillo north to the Pinacate region

Present distribution in parks: A total of 463 observations has occurred since they were first recorded within Organ Pipe Cactus N.M. in February 1945. Ninety-five percent of these observations were made in the westerly California microphyll desert portion of the park.

Former distribution: Desert plains of central western Sonora and north to southern Arizona.

Estimated numbers: In 1968, about 60 on the Cabeza Prieta Game Range and 15 in Organ Pipe Cactus N.M. According to Bernardo Villa R., following a survey in 1957, about 1,000 were then left in Mexico.

Reasons for decline: Competition from domestic cattle and horses. Overshooting and poaching, especially in Mexico in recent years. Predation on its reduced numbers.

Protective measures already taken: Establishment of Cabeza Prieta Game Range and Organ Pipe Cactus N.M. Mexican Government is taking protective measures.

Measures proposed: Establishment of an international game range. Research into the animal's ecologic needs.

Measures taken and/or proposed involving NPS: Designation of a proposed Organ Pipe Cactus Wilderness Zone is presently in a planning and review status. When completed, this will further ensure protection to park habitats known to be included in practically all of this species present range within this park. Enforcement of Federal laws which prohibit any form of harassment to park wildlife will be continued. Eventual total elimination of domestic stock grazing throughout the park now depends on legal proceedings which were initiated several years ago. It is anticipated this action will have decided favorable effects upon the future welfare of this native animal. The possibility of future watering developments and related management considerations which will alleviate disturbances to historical range conditions remain to be established.

State recognitions: None.

CALIFORNIA BIGHORN — Ovis canadensis californiana (Douglas)

Order: ARTIODACTYLA — Family: BOVIDAE

Present distribution: In the United States, free roaming populations apparently confined to eastern Oregon and the high Sierra Nevada of California. The maincrest of the mountains and lateral ridges running west are occupied in the summer months and the lower elevation east facing slopes during the winter. In Canada, there are herds in southern British Columbia, some of which may migrate into Washington during the summer. Reintroduced into southeastern Oregon and northwestern Nevada. Reintroduced to Lava Beds National Monument on October 23, 1971.

Present distribution in parks: Sequoia, Kings Canyon and Yosemite N.P's. presently contain summer range for the Sierra Nevada populations. Winter range for these herds are all east of the easterly boundaries of these parks. About 100 to 175 animals on summer ranges of Kings Canyon and Sequoia N.P.'s. Limited number may summer in Yosemite N.P.

Former distribution: From Chilcotin River, British Columbia, south through Cascades of Washington and Oregon and Sierra Nevada of California to vicinity of Mount Whitney; and western Nevada south probably to Mineral County.

Estimated numbers: Less than 200 in California; 1,200 in British Columbia, 250 in Oregon; 18 in Nevada.

Reasons for decline: Indiscriminate hunting and scabies, presumably contacted from domestic sheep, were evidently the principal cause for decline. Possibly direct competition with domestic livestock for adequate range predisposed the bighorn sheep population to disease.

Protective measures already taken: The California bighorn is fully protected by State law in California. In addition, an effort is underway to establish permanent natural populations of the subspecies in Washington with animals imported from British Columbia. Transplants to Hart Mountain Antelope Refuge and Steens Mountain, Oregon successful. Transplants to Sheldon Antelope Range, Nevada, and to Lava Beds National Monument, California recently made. In key bighorn

sheep areas in California the U. S. Forest Service and National Park Service have restricted human use by permit system. In Sierra Nevada Range a 41,000 acre zoological area to protect two herds established on Inyo National Forest.

Measures proposed: Continue efforts to introduce animals into areas from which they were extirpated; attempt to improve forage conditions through reduction of competing domestic livestock, elk, and deer.

Measures taken and/or proposed involving NPS: Continue cooperative Federal-State range, vegetative and associated studies on summer and winter ranges into reasons for an apparent lack of significant increases of Sierra Nevada populations. Establishment of protective wilderness zones on park summer ranges continue, when feasible, elimination of trails into critical summer ranges and enforcement of Federal regulations protecting this species.

State recognitions: California recognizes this as being a rare species.

PERIPHERAL MAMMALS

A peripheral species or subspecies is one whose occurrence in the United States is at the edge of its natural range and which is threatened with extinction within the United States although not in its range as a whole. Special attention is necessary to assure retention in our Nation's fauna.

Coatimundi or Chula, Nasua narica molaris. The lack of confirmed observations since occasional sightings between 1952 and 1958 at Walnut Canyon N.M. suggests this species is no longer found on this portion of the Mogollon Rim. The limited presence of coatimundi at Organ Pipe Cactus N.M. continues since being first observed in 1942. Only one sighting was recorded during 1973. Several observations in the 1960's at Saguaro N.M. with the most recent occurring in August 1970 suggests a decreasing population level in this portion of Arizona. Chiricahua presently reports it as being as commonly observed throughout the park as in past years. Large bands containing both adults and juveniles are particularly noticeable in late summer. Variable annual population levels have been reported by Coronado N. M.

STATUS-UNDETERMINED MAMMALS

A status-undetermined species or subspecies is one that has been suggested as possibly threatened with extinction, but about which there is not enough information to determine its status. More information is needed.

Chiricahua Squirrel, Sciurus nayaritensis chiricahuae. According to Dr. E. L. Cockrum, mammalogist at the University of Arizona, all fox squirrels in the Chiricahua Mountains are of this subspecies. If correct, the fairly common observations of fox squirrels in the Chiricahua N.M. portion of this isolated mountain range would be of this form. Recent frequencies and numbers of animals does not appear to differ significantly from sightings recorded during many past years.

Sierra Nevada Red Fox, Vulpes fulva necator. Formerly limited observations of this resident from Hudsonian and Canadian Life Zones of Yosemite N.P. Several observations during last decade but none within past 2 years.

Pine Marten, Martes americana. Relatively common resident of Lassen Volcanic N.P. Reported from remote areas located east of Redwood N.P. and, therefore, may occasionally range into this park. Less common to scarce in Yosemite, Kings Canyon and Sequoia N.P's, although previous to past decade, quite common in higher elevations of Yosemite N.P. Can be found in Giant Forest, Lodgepole area and in upper forested and subalpine portions of Sequoia-Kings Canyon N.P's.

Fisher, Martes pennanti. Seldom seen at Lassen Volcanic N.P. with last recording occurring in 1968. Reported from remote areas east of Redwood N.P., therefore, may accidentally range into this park. A scarce resident of Kings Canyon, Sequoia and Yosemite N.P's. While rarely observed in Sequoia-Kings Canyon N.P's., tracks are relatively common in the 3,000' to 5,000' portions of the Kaweah Drainage. Sporadic sightings indicate also a wide distribution from the 1,800' elevation at Ash Mountain to 7,000' above mean sea level. Sightings and signs are relatively rare in Yosemite N. P.

Wolverine, Gulo luscus. This extremely elusive and apparently scarce animal continues to be reported primarily on the basis of tracks noted in Kings Canyon, and Sequoia N.P's. Yosemite has few records of its presence. Its abundance is limited and probably always has been

in these southern limits of its distributional range. Generally found at higher elevations (above 8,000') in remote areas of the Kern, Kings and upper Kaweah River drainages with a possible small remnant population near Cedar Grove in Sequoia-Kings Canyon N.P's. California recognizes this as being a rare species.

Elephant Seal, Mirounga angustirostris. While not recorded from shoreline areas of Redwood N.P. they have been observed nearby among other marine mammals using Castle Island off of Crescent City, California. This species is uncommon yet is occasionally observed at Point Reyes N.S. One of the six breeding pinnipeds of San Miguel Island (U.S.Navy property cooperative administered by the Superintendent of Channel Islands N.M.) which contains the largest breeding colony of this species off the California coastline. Variable population levels sometimes in excess of 3,000 animals have been noted at San Miguel. This species is also found in smaller numbers on Santa Barbara Island (500-1,000 animals) and occasionally at Anacapa Island, Channel Islands N. M.

Appendix A

Official list of endangered native fish and wildlife, as amended through June 4, 1973

FISHES

Bonytail, Pahranagat	Gila robusta jordani
Chub, humpback	Gila cypha
Chub, Mohave	Siphateles mohavensis
Cisco, longjaw	Coregonus alpenae
Cui-ui	Chasmistes cujus
Dace, Kendall Warm Springs	Rhinichthys osculus thermalis
Dace, Moapa	Moapa coriacea
Darter, fountain	Etheostoma fonticola
Darter, Maryland	Etheostoma sellare
Darter, Okaloosa	Etheostoma okaloosae
Darter, watercress	Etheostoma nuchale
Gambusia, Big Bend	Gambusia gaigei
Gambusia, Clear Creek	Gambusia heterochir
Gambusia, Pecos	Gambusia nobolis
Killifish, Pahrump	Empetrichythys latos
Pike, blue	Stizostedion vitreum glaucum
Pupfish, Comanche Springs	Cyprinodon elegans
Pupfish, Devils Hole	Cyprinodon diabolis
Pupfish, Owens River	Cyprinodon radiosus
Pupfish, Tecopa	Cyprinodon nevadensis calidae
Pupfish, Warm Springs	Cyprinodon nevadensis pectoralis
Squawfish, Colorado River	Ptychocheilus lucius
Stickleback, unarmored threespine	Gasterosterus aculeatus williamsoni
Sturgeon, shortnose	Acipenser brevirostrum
Topminnow, Gila	Poeciliopsis occidentalis
Trout, Arizona (Apache)	Salmo sp.
Trout, Gila	Salmo gilae
Trout, greenback cutthroat	Salmo clarki stomias
Trout, Lahontan cutthroat	Salmo clarki henshawi
Trout, Paiute cutthroat	Salmo clarki seleniris
Woundfin	Plagopherus argentissimus

REPTILES AND AMPHIBIANS

Alligator, American	Alligator mississippiensis
Boa, Puerto Rican	Epicrates inornatus
Lizard, blunt-nosed leopard	Crotaphytus silus
Salamander, desert slender	Batrachoseps aridus
Salamander, Santa Cruz long-toed	Ambystoma macrodactylum croceum
Salamander, Texas blind	Typhlomolge rathbuni
Snake, San Francisco garter	Thamnophis sirtalis tetrataenia
Toad, Houston	Bufo houstonensis

BIRDS

Akepa, Hawaii (akepa)	Loxops coccinea coccinea
Akepa, Maui (akepuie)	Loxops coccinea ochraceu
Akialoa, Kauai	Hemignathus procerus
Akiapolaau	Hemignathus wilsoni
Bobwhite, masked	Colinus virginianus ridgwayi
Condor, California	Gymnogyps californianus
Coot, Hawaiian	Fulica americana alai
Crane, Mississippi sandhill	Grus canadensis pulla
Crane, whooping	Grus americana
Crow, Hawaiian (alala)	Corvus tropicus
Creeper, Molakai (kakawahie)	Loxops maculata flammea
Creeper, Oahu (alauwahio)	Loxops maculata maculata
Curlew, Eskimo	Numenius borealis
Duck Hawaiian (koloa)	Anas wyvilliana
Duck, Laysan	Anas laysanensis
Duck, Mexicam	Anas diazi
Eagle, Southern bald	Haliaeetus leucocephalus leucocephalus
Falcon, American peregrine	Falco peregrinus anatum
Falcon, Arctic peregrine	Falco peregrinus tundrius
Finches, Laysan and Nihoa	Psittirostra cantans
Gallimule, Hawaiian	Gallinula chloropus sandvicensis
Goose, Aleutian Canada	Branta canadensis leucopareia
Goose, Hawaiian (nene)	Branta sandvicensis
Hawk, Hawaiian (io)	Buteo solitarius
Kite, Florida Everglade (snail kite)	Rostrhamus sociabilis plumbeus
Honeycreeper, crested (akohekohe)	Palmeria dolei
Millerbird, Nihoa	Acrocephalus kingi
Nukupuus, Kauai and Maui	Hemignathus lucidus
Oo, Kauai (oo aa)	Moho braccatus
Ou	Psittirostra psittacea
Palila	Psittirostra bailleui
Parrot, Puerto Rican	Amazona vittata
Parrotbill, Maui	Pseudonestor xanthorphrys
Pelican, brown	Pelecanus occidentalis
Petrel, Hawaiian dark-rumped	Pterodroma phaeopygia sandwichensis
Pigeon, Puerto Rican plain	Columba inornata wetmorei
Prairie Chicken, Attwater's greater	Tympanuchus cupido attwateri
Rail, California clapper	Rallus longirostris obsoletus
Rail light-footed clapper	Rallus longirostris levipes
Rail, Yuma clapper	Rallus longirostris yumanensis
Sparrow, Cape Sable	Ammospiza mirabilis
Sparrow, dusky seaside	Ammospiza nigrescens
Sparrow, Santa Barbara song	Melospiza melodia graminea
Stilt, Hawaiian	Himantopus himantopus knudseni
Tern, California least	Sterna albifrons browni
Thrush, large Kauai	Phaeornis obscurus myadestina
Thrush, Molokai (olomau)	Phaeornis obscurus rutha

BIRDS

Thrush, small Kauai (puaiohi)	Phaeornis palmeri
Warbler, Bachman's	Vermivora bachmanii
Warbler, Kirtland's	Dendroica kirtlandii
Whip-poor-will, Puerto Rican	Caprimulgus noctitherus
Woodpecker, ivory-billed	Campephilus principalis
Woodpecker, red-cockaded	Dendrocopus borealis

MAMMALS

Bat, Hawaiian hoary	Lasiurus cinereus semotus
Bat, Indiana	Myotis sodalis
Cougar, Eastern	Felis concolor cougar
Deer, Columbian white-tailed	Odocoileus virginianus leucurus
Deer, Key	Odocoileus virginianus clavium
Ferret, black-footed	Mustela nigripes
Fox, San Joaquin kit	Vulpes macrotis mutica
Manatee, Florida (sea cow)	Trichechus manatus latirostris
Mouse, salt marsh harvest	Reithrodontomys raviventris
Panther, Florida	Felis concolor coryi
Prairie Dog, Utah	Cynomys parvidens
Pronghorn, Sonoran	Antilocapra americana sonoriensis
Rat, Morro Bay kangaroo	Dipodomys heermanni morroensis
Squirrel, Delmarva Peninsula fox	Sciurus niger cinereus
Wolf, Eastern Timber	Canis lupus lycaon
Wolf, Northern Rocky Mountain	Canis lupus irremotus
Wolf, red	Canis rufus

APPENDIX B

SUMMARY OF OFFICIAL RECOGNITIONS

	MAXIMUM FEDERAL - STATE RECOGNITIONS					
	THREATENED IN USDI REDBOOK	USDI ENDANGERED SPECIES	ARIZONA ENDANGERED SPECIES	CALIFORNIA ENDANGERED SPECIES	HAWAII ENDANGERED SPECIES	NEVADA ENDANGERED SPECIES
FISH						
Lahontan Cutthroat Trout	x	x				
Paiute Cutthroat Trout	x	x				
Little Kern Golden Trout	x					
Humpback Chub	x	x				
Moapa Dace	x	x				
Colorado River Squawfish	x			x		x
Devil's Hole Pupfish	x	x				x
REPTILES AND AMPHIBIANS						
Green Turtle	x					
BIRDS						
Newell's Manx Shearwater (Ao)	x		NO OFFICIAL STATE RECOGNITIONS BEYOND NORMAL PROTECTIVE REGULATIONS			
Hawaiian Dark-Rumped Petrel (Uau)	x	x			x	
California Brown Pelican	x	x		x		
Hawaiian Goose (Nene)	x	x			x	
California Condor	x	x			x	
Hawaiian Hawk (Io)	x	x		x		
Southern Bald Eagle	x	x		x		
Prairie Falcon	x					
American Peregrine Falcon	x	x		x		x
California Black Rail	x					
Spotted Owl	x					
Hawaiian Crow (Alala)	x	x			x	
Crested Honeycreeper (Ahohekohe)	x	x			x	
Akiapolaau	x	x			x	
Hawaiian Akepa (Akepa)	x	x			x	
Maui Akepa (Akepuie)	x	x			x	
Ou	x	x			x	
MAMMALS						
Hawaiian Hoary Bat	x	x			x	
Spotted Bat	x					x
Kaibab Squirrel	x					
Grey Whale	x					
Mexican Wolf	x					
Southern Sea Otter	x					
Tule Elk	x					
Sonoran Pronghorn	x	x				
California Bighorn	x					